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JUNE 28, 1952

INDEX

SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE



Coiled Microorganism

See Page 403

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TECHNOLOGY

Beach Sands Made Hard

Powdered blackstrap molasses combined with bunker fuel oil or asphalt, depending on availability, makes sandy surfaces suitable for heavy equipment.

► **BLACKSTRAP MOLASSES** and bunker fuel oil are the principal ingredients of a newly developed binder to make beach sands hard enough for the passage of heavy military equipment in future amphibious landings. Asphalt can be used instead of the oil.

At a conference on soil stabilization at the Massachusetts Institute of Technology, Cambridge, Mass., the development of this binder, now known as Plasmofalt, was described by George W. Rappleyea of the Tropical Agricultural Research Laboratory, Southport, N. C., where the work was done under contract with the U. S. Marine Corps.

The use of molasses as a stabilizer is not new, he stated. In 1910, the U. S. Department of Agriculture constructed an experimental road in Newton, Mass., using molasses as a binder. The road was a failure because the molasses, being soluble in water, washed away during the first heavy rain. He referred also to experimental work in India during the 1936-38 period in which the binder was a polymerized mixture of

blackstrap molasses and asphalt.

"In the development of Plasmofalt," he said, "we proceeded on the theory first that oil and water do not mix, and second, that by using a dehydrated molasses or a powdered molasses and a suitable catalyst we could obtain quickly a composition that would be insoluble in water and a binder with unusual adhesive qualities."

Bunker fuel was used because it is more readily available than asphalt in most parts of the earth.

Developed is a Plasmofalt concentrate which contains a maximum amount of powdered molasses, catalyst and accelerator in a minimum amount of fuel oil. A 55-gallon drum of this when sent ashore and mixed with 10 barrels of fuel oil from the ship's bunkers produces two tons of Plasmofalt when heated a half hour at 450 degrees Fahrenheit. These two tons, when mixed with sand, gravel or crushed rock, make 42 tons of paving material, or enough to make a paving of 840 square yards one inch thick.

Science News Letter, June 28, 1952

GENERAL SCIENCE

AEC Research Funds Cut

► A **DRASTIC** cut of 30% in physics research funds for the Atomic Energy Commission will seriously interfere with the search for new sources of atomic energy, including atomic bomb materials, **SCIENCE SERVICE** has learned.

The AEC asked for \$49,000,000 for physics research operations and new plant and equipment in its regular appropriation. Both the Senate and the House cut this to \$34,000,000. The bill which includes this appropriation now is in conference.

Much of the appropriation, according to **SCIENCE SERVICE** sources, would have paid for investigation into the function of the meson in the fission of atoms. A meson is "thought to be a particle." It is possible that, when uranium is fissioned, as in an A-bomb explosion, mesons fly out of the atoms. It is the belief of physicists that if and when it is discovered how and why mesons fly out of atoms when they are divided, it will be known how to divide or fission many elements.

If we can use other elements for providing atomic energy by fission, we have vast new sources of atomic energy.

According to **SCIENCE SERVICE** sources, the 30% cut in physics research funds will

seriously curtail this line of research. There is disagreement as to the relative abundance of uranium, primary material for A-bombs, but all are agreed that ability to use other elements for atomic energy would be highly useful.

There is some hope that the AEC may use funds out of its \$3,000,000,000 supplementary appropriation for this purpose. The Senate Appropriations Committee, in reporting out the cut, said that the AEC may "discuss" with the committee the possibility of using supplementary funds for any functions cut in the regular appropriation bill.

Science News Letter, June 28, 1952

CHEMISTRY

Try to Find Taste Part of Maple Syrup

► **NOW THEY** are trying to take the taste out of maple syrup and study it.

Scientists want to find out what it is that makes maple syrup taste like maple syrup and not like something else. If they can do this, Dr. William L. Porter, analytical chemist of the Eastern Regional Research Laboratory, Philadelphia, said, perhaps farmers

can produce better syrup and there will be better flavoring for maple sugar and ice cream.

Dr. Porter told the American Chemical Society's summer analytical symposium in East Lansing, Mich., that maple sap from the tree has absolutely no maple flavor. This is acquired in the process of making the syrup. He and Dr. Charles O. Willits have divided both the sap and the syrup into three components and subdivided those even further. But they have not yet isolated the taste-causing component.

Science News Letter, June 28, 1952

MEDICINE

Baby's Arrival More Likely Late Than Early

► **TO EXPECTANT** parents wondering whether the baby will be born before or after the date the doctor predicted: The baby is twice as likely to be late as early.

This is from statistics gathered by Dr. Edward Liston of Palo Alto, Calif.

Out of 1,284 consecutive babies born at the Palo Alto Hospital between September, 1950 and April, 1951, only 32 arrived on the date set. Births were before the predicted date in 425 cases, late in 827.

As to whether baby is more likely to be late or early when he is the first child in the family, Dr. Liston's figures show this: More than three weeks early were two first babies and five born to mothers who already had had babies. More than three weeks late were three first babies, six in the later than first baby group.

Dr. Liston reports his study in **CALIFORNIA MEDICINE** (June), official journal of the California Medical Association.

Science News Letter, June 28, 1952

ENTOMOLOGY

Tag Sprays for Study Of Insect-Killing Action

► **KILLING** of flies by pyrethrum sprays will be better understood when Gulf Oil scientists use a thousandth of a pound of radioactively tagged insecticide that they have just manufactured.

One pound of the "hot" insecticide would cost \$18,000,000.

Grown in a hot house atmosphere containing radioactive carbon dioxide, pyrethrum plants were carefully raised and their one to two percent of "hot" pyrethrins extracted. This precious material will be used to trace the paralyzing and lethal action in the bodies of insects it kills.

Discovery of synergistic chemicals that can step up the action of pyrethrum and lessen insecticide expense may result from the researches outlined to the Chemical Specialties Manufacturers Association meeting in Boston by A. C. Miller, Gulf Oil entomologist.

Science News Letter, June 28, 1952

BACTERIOLOGY

'Flu Virus Found Smaller

Sizes of all viruses must be recalculated, since "best yet" submicroscopic pictures show that the organisms are smaller than previously believed.

See Front Cover

► THE INFLUENZA virus is only four-fifths the size that previous electron microscope photographs have shown it. The sizes of all viruses, many of deadly diseases, must be recalculated.

The best submicroscopic pictures, showing organisms and viruses in three-dimensional form for the first time, were presented by Dr. Robley Williams of the University of California Virus Laboratory to the American Association for the Advancement of Science meeting in Corvallis, Ore.

A new freeze-drying method immobilizes the smallest of living particles in a ten-thousandth of a second. With it Prof. Williams got his new and "best yet" electron microscope photographs.

The sizes and shapes of viruses will have to be re-evaluated. The technique may permit researchers to some extent to photograph viruses and other agents in the act of attacking cells.

The key to the new method lies in a special application of freeze-drying of biologi-

cal samples before photographing them.

Biological materials must be dried before being photographed in the electron microscope. Conventional methods require that water be dried out of samples. This creates surface tensions which squash the objects flat and thus present them in a distorted form. They look larger than they are.

Dr. Williams sprays his samples on a colloid surface with an atomizer. The droplets are only about a billionth of a cubic centimeter in size. His apparatus freezes the samples in about one ten-thousandth of a second, then a vacuum pump dries them as ice rather than liquid.

Viruses, bacteria and other objects retain their true shape when thus treated. They cast a high shadow, in contrast to very limited shadows cast by the squashed objects treated conventionally.

The contrast can be seen clearly by comparing the micrograph on the cover of this week's SCIENCE NEWS LETTER with the one shown below. The cover picture was taken of the harmless organism known as *Rhodospirillum rubrum* when prepared by the

freeze-dry method, while the photograph below shows the same organism when prepared by drying in air.

So rapid is the freeze-drying technique that Dr. Williams hopes to be able, by choking off biological reactions, to catch the reacting materials in their true relationship. It may be possible to find at what point viruses attack living cells, and see this in true three-dimensional form.

The research was supported by the National Foundation for Infantile Paralysis in New York.

Science News Letter, June 28, 1952

PUBLIC HEALTH

'Flu Vaccine Protects, Industry Test Shows

► VACCINATION AGAINST influenza helped many employees of the Remington Arms Co., Bridgeport, Conn., to escape the disease when an epidemic struck Bridgeport, it appears.

The vaccine used contained a mixture of types A and B. Laboratory tests were not made to determine the exact virus causing the epidemic so Dr. C. F. Yeager of the company in reporting to the American Public Health Association is cautious in his conclusions. Most of the outbreaks of 'flu that year (1951) in different parts of the country were found due to Influenza A prime virus when tests were made.

But the record shows that of 1952 employees not vaccinated, 183 were sick with influenza, while only 15 got the disease among the 847 who were vaccinated. This is an incidence of 9.4% in the unvaccinated group, compared with 1.77% in the vaccinated. The average number of days lost from work was 8.2 in the unvaccinated group, 8.0 in the vaccinated.

Science News Letter, June 28, 1952

ENGINEERING

Power-Line Device Reduces Flicker of Electric Light

► ANNOYING LIGHT flickers, often typical of rural electric service, can be reduced substantially by a transformer device described to the American Institute of Electrical Engineers meeting in Minneapolis, Minn.

Paul A. Cartwright, assistant professor of electrical engineering at the University of Minnesota, said the power-line device was known as a "line-drop compensator." It works the instant a motor-driven appliance is switched on, virtually eliminating the momentary dimming of lights.

Essentially a low-voltage auto-transformer, the device also will help solve other disturbances on secondary power lines, he said. It is simple in construction, compact, inexpensive and requires little time for maintenance.

Science News Letter, June 28, 1952



AIR-DRIED MICROORGANISM—Squashed into a two-dimensional sine wave, by ordinary air-dried preparation, the organism shown here is used as a test object in a new technique for electron microscopy.

BIOCHEMISTRY

Drug for Palsy Victims

► A DRUG that promises to help victims of cerebral palsy, infantile paralysis and other nerve-muscle diseases by relieving muscle spasm is announced by Dr. Virgil C. Boekelheide of the University of Rochester, Rochester, N. Y.

The new drug is called apo-beta-erythroidine. It is derived from the curare-like drug, beta-erythroidine. Dr. Boekelheide and associates have also succeeded in determining the chemical structure of beta-erythroidine, a feat hailed by fellow scientists as "an intellectual accomplishment of great value" in addition to its potential practical value in medicine.

The erythroidine bean, found principally in Guatemala and South America, is the natural source of the drug. With the chemical structure of the drug known, scientists

may be able to develop other compounds that will advance the treatment of disabilities resulting from accidental or disease injury of the nerve and muscle systems.

The new drug developed by the Rochester group, apo-beta-erythroidine has a longer-lasting action in relieving muscle spasm than other drugs used for this purpose, tests on laboratory animals show.

Collaborating with Dr. Boekelheide in the chemical research and testing of the drug were Dr. R. Plato Schwartz of the School of Medicine and Dentistry and Drs. George Sauvage, Michael Grundon, Joseph Weinstock and Eugene Agnello. The chemical research is reported by the scientists in the JOURNAL OF THE AMERICAN CHEMICAL SOCIETY.

Science News Letter, June 28, 1952

AERONAUTICS

Near 89,000 Planes

► AMERICA TODAY has nearly 89,000 aircraft registered with the Civil Aeronautics Administration according to a recent survey.

On Jan. 1, 1952, there were 54,039 active and 34,506 inactive aircraft on record with the CAA, which has administrative control of public and private flying in the United States.

Large transports may seem most plentiful to the general public, but actually more than 50,000 of the registered civil craft are one-engine types. Approximately 2,700 are twin-engine, 540 four-engine and 12 tri-motored aircraft.

Of the total of recorded civil aircraft, 1,253 are owned by the scheduled airlines.

Even counting planes used commercially by non-scheduled companies, private flying by individuals and business organizations seems to use the majority of American aircraft.

A hopeful note in private flying is the notable decrease in accidents due to stall-spin during the last quarter of 1951. Statistics compiled by the CAA show that for this period, there were 39 stall-spin accidents, compared with 113 for the same three months of 1950.

Two years ago approximately half the fatal accidents in general aviation were caused by stall-spins. Because of this high rate the CAA sent out a specially equipped plane to tour the country demonstrating improved stall recovery techniques. The de-

crease in accidents from this cause is probably due to the success of these demonstrations.

A report just issued by the CAA shows flying into bad weather or into darkness on cross-country flights replaced stalls and spins as the primary cause of serious accidents during the last quarter of 1951. These causes account for 6.5% of the total accidents and 40% of the fatal accidents.

Science News Letter, June 28, 1952

Copper is the only metal with a red color.

SCIENCE NEWS LETTER

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Question Box

ANTHROPOLOGY

When was America's first wave of migration? p. 411.

ASTRONOMY

What is the brightest star to be seen in July? p. 407.

ENTOMOLOGY

Against what insect pests have airplane hostesses been alerted? p. 411.

GENERAL SCIENCE

What is the job outlook for chemists? p. 409.

ICHTHYOLOGY

How can fish drown? p. 409.

MEDICINE

Why are leprosy victims being treated with the new anti-tuberculosis drug, isoniazid? p. 406.

METEOROLOGY

What weather can be expected during the first half of July? p. 411.

PHYSICS

How can X-rays be televised? p. 406.

Photographs: Cover and p. 403, University of California; p. 405, Marine Studios.

GENETICS

**Polio Susceptibility
Due to Double Inheritance**

➤ **SUSCEPTIBILITY** TO infantile paralysis, or poliomyelitis, may be due to having inherited a "double dose" of a recessive gene for susceptibility to the disease.

This theory is supported by a study of polio in twins reported by Dr. C. Nash Herndon of Wake Forest College, the Bowman Gray School of Medicine, Winston Salem, N. C., to the National Foundation for Infantile Paralysis in New York.

The theory implies, Dr. Herndon explains, that "while both parents might be resistant to poliomyelitis, if they both happen to carry a hidden tendency (a recessive gene) for susceptibility, their child might receive this tendency from both parents."

The probability that any given child of such "carrier" parents would be susceptible, Dr. Herndon calculates, would be one in four, with about three-fourths of the children resistant.

In the twin study, Dr. Herndon found that if one member of a pair of identical twins, from a single fertilized egg, develops paralytic polio, the likelihood that the other twin will also develop the disease is about 36%. For fraternal twins from two separate fertilized eggs, the probability that the second twin will be affected is only about six percent. This is about the same percentage as in a second child in a family without twins coming down with the disease.

Science News Letter, June 28, 1952

BIOCHEMISTRY

**Blood Stored Safely
For Months at -110°F.**

➤ **THERE IS** hope that human blood red cells can be stored at very low temperatures for long periods of time and still be useful for transfusions.

Experiments by Dr. H. A. Sloviter at the National Institute for Medical Research, London, show that 70% of treated blood held at 79 degrees below zero Centigrade (110 degrees below zero Fahrenheit) is still intact after nine months.

If it proves satisfactory in human experiments now in progress, the new method is expected to be used at least for the preservation of red cells of rare blood groups.

The present researches, which were supported by Runyon and American Cancer Society funds through the U. S. National Research Council, were based on the discovery of three years ago that glycerol (glycerin) mixed with blood largely prevents the death or disruption of living cells when subjected to temperatures well below the freezing point. The glycerol is removed from the blood after it is thawed out and before it is used. The report appears in the journal *NATURE* (June 14).

Science News Letter, June 28, 1952



WALKING FOR AIR—The shark shown here is being given a form of artificial respiration. He is being "walked" by Floyd Adams of Marine Studios, Florida, to force water through its gills to restore normal breathing, lost during the exhausting catch.

ELECTRONICS

TV Scans Ocean Floor

➤ **TWO NEW** and improved "diving" television cameras especially built to scan ocean floors with their electronic eyes will be used by the British Navy for salvage and hull-inspecting operations and by the Admiralty Research Laboratory for scientific studies soon.

One complete system is scheduled for immediate delivery to the Navy. It will be put through extensive sea trials on the deep-diving vessel *Reclaim*.

Underwater television, which escapes many limitations of human divers, already has been used in England and in the United States. Scientists employed underwater video in 1947 to evaluate results of the Bikini atom bomb tests. It was used in England last year in the search for the sunken HMS *Affray*.

The new television cameras are to be housed in watertight casings capable of sinking to depths of 1,000 feet. A lighting system attached to a stabilizing fin outside the casing will illuminate the 70-degree field of vision provided by the cameras' wide-angle lenses.

Remote facilities will permit shipboard viewers to change lenses for close-up pictures, to adjust the aperture to let in the proper amount of light, and to focus the camera. Shipboard screens will be linked to the underwater cameras by a complex, mul-

ticore cable which will transmit the camera's electronic signals.

Television cameras can work at greater depths and for longer periods of time than can divers, and no risk of life is involved. They can be maneuvered easily. Since they present pictures to shipboard viewers, less accurate verbal descriptions are eliminated.

Science News Letter, June 28, 1952

ENGINEERING

**Circuit Breaker
Passes Severe Test**

➤ **A CIRCUIT** breaker tested by General Electric engineers in Philadelphia passed a short circuit test severe enough to blow fuses in 800,000 homes.

A circuit breaker is a device used by power companies to protect their transmission lines from electrical overload just as fuses protect household circuits from too much current.

The device was supplied the highest amount of short-circuit current available in any laboratory in the world during the tests.

During the test two generators combined to create the tremendous amount of short-circuit current needed for the test, which did no damage.

Science News Letter, June 28, 1952

PHYSICS

TV'ed X-Rays Spot Cancer

Develop instrument that televises X-rays for aid in detecting cancer of "dense" parts of patient's body. It can also be used to test airplane parts.

► **EARLY DETECTION** of cancer of the gastro-intestinal region will be aided by use of a machine that televises X-rays, now under development in Chicago.

The X-ray-television equipment will give sharp, clear pictures of the "dense" parts of a patient's insides. In order to examine such regions of the body now, doctors have to use X-ray dosages that are about one-eighth of the maximum amount to which humans can be exposed without injury.

Using the new device, doctors will be able to get a clear look through as much as ten inches of body tissue, yet the X-ray dose will be only about one one-hundredth of that now used. Magnification of images up to an order of 100 times has made it possible to blow up the image of a mosquito to the size of a grapefruit.

The X-ray-television combination is equipped with a "memory" tube that will hold any picture for as long as two days, if desired. Or the picture on the memory tube can be photographed.

The instrument, developed by Dr. Robert J. Moon of the University of Chicago's Institute of Radiobiology and Biophysics, also can be used to test airplane parts by X-rays and to keep a permanent record of such tests. Vital parts of airplanes are now X-rayed and viewed on a fluoroscopic screen that must be the same size as the object being viewed.

X-ray-television scanning uses a television-like screen of any desired size and the memory tube allows photographing of the inspected parts.

Dr. Moon uses a beam of electrons from a television-type electron gun known as the Pierce gun. The beam scans a target of wolfram, or tungsten, where some of the electrons are changed to X-rays. A very small number of these X-rays, about one in 10,000, passes through a tiny pinhole and then through the object being examined.

In going through the object, the X-rays are modified, and the changes that have taken place tell the story of whatever is being X-rayed. In Dr. Moon's method, this information is extracted by changing the X-rays to bursts of ultraviolet light. This is done by passing them through a crystal of calcium fluoride about four inches in diameter and over two inches thick.

The pattern of the light bursts is then picked up by a photo-multiplier tube which, working on the same principle as the "electric eye," changes the light pattern to elec-

tric signals and greatly increases their strength. An amplifier further steps up the electric signal before it is passed through a sorter to the television-like screen. On this screen the X-rayed object is reproduced approximately one thousand times brighter than with the usual fluoroscopic screen used now with X-rays.

Dr. Moon is aiming at producing a focal spot about one four-thousandth of an inch in diameter at 125 kilovolts using a current of 100 milliamperes. He has now worked the instrument satisfactorily at currents of 50 milliamperes.

Science News Letter, June 28, 1952

MEDICINE

Anti-TB Drug for Leprosy

► **VICTIMS OF Hansen's disease** (leprosy) are now getting treatment with the new anti-tuberculosis drug, isoniazid, the Leonard Wood Memorial (American Leprosy Foundation) announced in Washington.

Barely two months after news of the new drug first broke, 13 patients in Westfort, Pretoria, South Africa, were given their first dose. Another 24 patients there have since been started on this treatment.

It is still too early to say whether the new drug will be as successful in Hansen's disease as it shows promise of being in tuberculosis. A report received at the Leonard Wood Memorial, written at the end of one month of trial of the drug, stated that there was little, if any, change in the patients' condition.

Results of use of the drug in this disease, however, would not be expected as quickly as in tuberculosis. Hansen's disease, or leprosy, takes a much longer time both to develop and to respond to treatment.

Reason for trying the new anti-TB drug in Hansen's disease is that the germs which cause it are somewhat like the germs which cause tuberculosis. What stops one may stop the other. Sulfones, originally developed as anti-TB drugs, have proved the best so far for leprosy, though they were not successful in tuberculosis.

Trial of isoniazid for leprosy will also be started shortly, or may already be under way, in the Philippines and in Japan. The Westfort Institution in South Africa, the Eversley Childs Sanitarium in Cebu, and institutions at Aisei-en and Komyo-en, Japan, are cooperating with the Leonard Wood Memorial in trials of various sul-

● RADIO

Saturday, July 5, 1952, 3:15-3:30 p.m. EDT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Alexander Wetmore, sixth Secretary of the Smithsonian Institution, discusses "The Smithsonian Institution."

PALEONTOLOGY

Unearth Fossil Species At Wyoming Reservoir Site

► **TWO NEW** species, a lizard and an insectivore, were among the fossils collected on the site of the Boysen Reservoir near Shoshoni, Wyo. This area is now being combed for material of scientific interest before it is flooded with water.

The collection was made and specimens identified by Dr. Theodore E. White of the Smithsonian Institution.

Science News Letter, June 28, 1952

phones and some anti-TB drugs, as reported in *SCIENCE NEWS LETTER*, Sept. 1, 1951. Isoniazid is now being included in these trials in which 960 patients are taking part.

Supplies of the isoniazid have been flown to the Philippines, and it is being manufactured in Japan. The South African trials are being made with supplies of isoniazid from the United States, England and Switzerland.

A conference of the scientists taking part in the trials in all three countries with consultants from the Leonard Wood Memorial is tentatively planned for late this summer.

Science News Letter, June 28, 1952

ENTOMOLOGY

DDT Less Popular With Farmers Now

► **DDT IS** losing its popularity with farmers as a means of checking flies, lice, fleas and other parasites of livestock, a committee of the American Veterinary Medical Association reported to the meeting in Atlantic City, N. J.

Chlordane and lindane and other synthetic chemicals are replacing DDT to a considerable extent, the committee found.

Both chlordane and a lindane-rotenone compound give excellent control in treating cattle lice, whereas DDT is not so satisfactory for this purpose.

Benzene hexachloride is now widely used to treat sheep and cattle mange. However, this chemical is poisonous to livestock if accidentally given to them.

Science News Letter, June 28, 1952

ASTRONOMY

Mars, Saturn Still Visible

Brightest of stars to be seen during July is Vega, high in the eastern sky. Twenty-one stars in 88 constellations are rated of the first magnitude.

By JAMES STOKLEY

► FROM ITS close approach to the earth in early May, when it was less than 52,000,000 miles away, by the middle of July the planet Mars will have receded to about 77,000,000 miles.

Even though it is gradually dimming as its distance increases, Mars still shines brightly in the southwestern evening sky. Its position is shown on the accompanying maps, which indicate the appearance of the heavens at about 10:00 p.m. on July 1, and an hour earlier around the 15th (add one hour if you are on daylight time).

Mars is near the border between the constellations of Libra, the scales, and Virgo, the virgin, and its red color along with its brightness makes it easy to locate.

Also in Virgo, a little to the west, is the other planet visible these evenings, Saturn. Its brightness is less than a third that of Mars, though it still equals a typical first-magnitude star. At mid-July its distance will be some 755,000,000 miles, nearly ten times as far as Mars.

Spot Brightest Vega

Brightest of the stars to be seen these evenings is Vega, in Lyra, the lyre, high in the eastern sky. Underneath it is the figure of Cygnus, the swan, with Deneb as the most brilliant star.

In Cygnus is the group known as the northern cross, which is now horizontal, with Deneb at the northern end. This is divided between the maps for the northern and southern halves of the sky.

Just under the star marking the southern end of the cross is another bird, Aquila, the eagle, and in it shines Altair. This star is third in brightness among those shown.

The second brightest is high in the west, Arcturus, in Bootes, the bear driver. One good way of locating it is to look for the familiar "great dipper" in the northwest.

As nearly everyone knows, the two stars Dubhe and Merak, in the bowl of the dipper, which is now at the bottom, are the pointers which show the direction (now toward the right) of Polaris, the pole star.

The dipper may also be used to find Arcturus. All one has to do is to follow the curve of the handle and Arcturus is the first bright star.

Continuing the curve still farther toward the south brings you to Virgo. Besides Mars and Saturn, which are temporary

visitors to it, this group has the star Spica as a permanent resident.

Directly south, just above the horizon, stands Scorpius, the scorpion. The brightest star is Antares, the name of which means "rival of Mars," given because of its red color. With the planet also visible a short distance to the right, it is now easy to compare them to see whether the ancients were justified when they named Antares.

Jupiter Brighter Than Mars

After midnight, the planet Jupiter rises in the east in the constellation of Aries, the ram. Its magnitude about July 15 is minus 1.9, which makes it nearly five times as bright as Mars.

On July 15 the innermost planet, Mercury, is farthest east of the sun and will remain in the sky a little while after sunset. Though this is not the time of the year for it to be seen best, one may be able to get a glimpse of Mercury as twilight is falling. A clear view to the west is essential to find this planet.

Venus, which passed behind the sun late in June, is also in the evening sky just after sunset, but has not yet drawn far enough away from the sun to be seen. By August, however, one should be able to glimpse it.

It would be interesting to watch the evening sky carefully around the end of July and early August to see when Venus may first be discerned.

For quite obvious reasons the constellations containing the brightest stars get most attention. Yet there are 88 constellations and only 21 stars of the first magnitude. Since three constellations (Orion, the south-

ern cross and the centaur) contain two each, that means only 18 constellations can boast of a star of this brightness. Among the remaining 70 there are many important groups and even the least conspicuous have many points of interest.

For example, on the southern map, to the right of the lower part of Aquila, is a single star marked Scutum. In this group there are some 28 stars as bright as the sixth magnitude, which is generally considered the faintest that can be seen with the naked eye under the very best conditions. The brightest of these, of the fourth magnitude, is the only one of sufficient brilliance to be indicated on these maps.

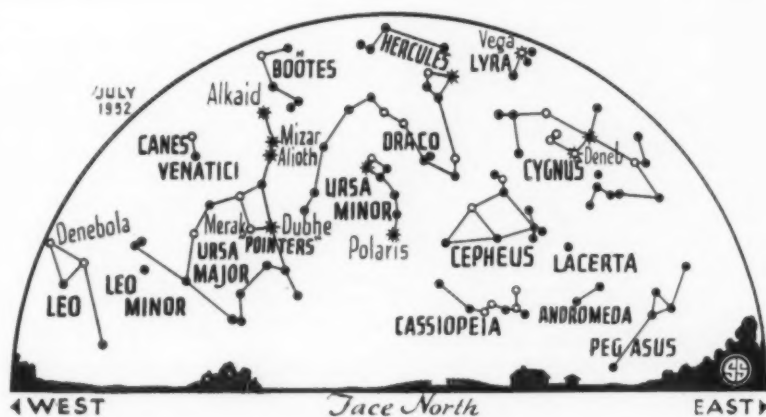
The constellation of Scutum is one of a number that were introduced by the Polish astronomer Hevelius in his maps of the skies published in 1690. He called it Scutum Sobiescianum, or Sobieski's shield, and with it he paid honor to the king of Poland, John Sobieski.

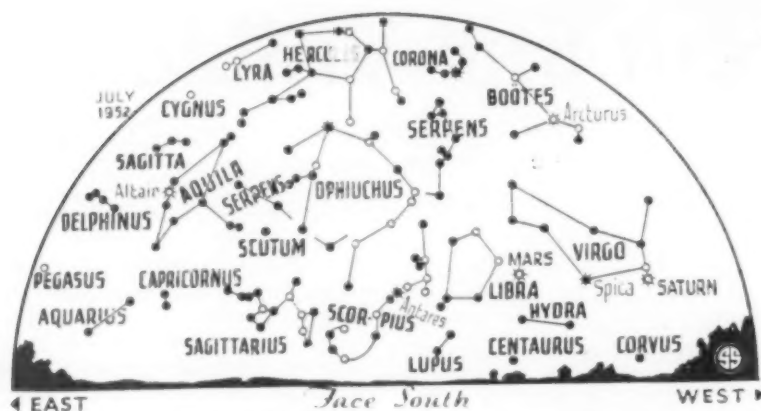
This great hero, commander of the Polish army, fought against the Turks and after defeating them at the battle of Hotin was elected king in 1674. He defeated them again in 1683 as they were besieging Vienna, and this brought him his greatest fame. This, added to the fact that he was a patron of science and literature, makes it readily understandable why Hevelius placed his coat of arms in the sky, on his shield.

Scutum in Milky Way

Astronomically, Scutum, as it is now generally called, is in the brightest part of the Milky Way, which consists of vast swarms of stars. Many years ago Sir William Herschel estimated that within the boundaries of this little group as many as 331,000 stars could be detected. With modern instruments the number that could be spotted would be even greater.

Then there is Corona Borealis, the northern crown, which is shown high in the





◊ * ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

west, just above Boötes. This has a star of the second magnitude, as well as four of the fourth, so five are indicated. Thirty-four are shown on a map that goes down to the sixth magnitude.

The arrangement of the brighter stars makes readily apparent why the ancients termed this first a wreath and later, a crown. Mythologically this was identified with the crown that Bacchus presented to Ariadne, daughter of Minos, second king of Crete.

Legend of the Crown

According to the legend, Theseus, King of Athens about 1200 B.C., was shut up in the famous labyrinth at Crete, where dwelt the ferocious Minotaur. It was this animal's habit to feed on the young men and women that the Athenians furnished each year as a tribute.

Theseus killed the Minotaur and, with the aid of a thread that Ariadne had furnished him, was able to find his way out of the labyrinth. He married Ariadne and took her away to the island of Naxos, though later he ungratefully deserted her!

According to Plutarch, she lived for many years after this and was loved by Bacchus, who gave her a crown of seven stars. After her death, this was placed in the sky.

To some tribes of American Indians, this group was a council of chiefs around a campfire. In the center of the circle there is a faint star, and they said that this was a servant, standing over the fire, and cooking the meal.

Zodiac Constellation

Though it is one of the 12 constellations of the zodiac through which the sun, moon and planets appear to move, and can hardly be called a constellation that is not well-known, the group of Libra, the scales, contains no stars brighter than third magnitude. It stands in the southwest between Virgo and Scorpius, and Mars is within its boundaries for the early part of the month.

Originally, Libra was part of the scorpion and represented that creature's claws. In fact, the two brightest stars in Libra have names that recall this connection. The one to the north is called Zubeneshamali and the other Zubenelgenubi. These mean, respectively, "the northern claw" and "the southern claw," which hardly makes sense in a pair of scales.

Perhaps the change came in the time of Julius Caesar, for the Romans are said to have placed him in the sky, holding a pair of scales. Later, according to this theory, the figure of Caesar was dropped and only the scales remained.

However, there is evidence that much earlier these stars were also considered as a pair of scales, so perhaps the Romans merely revived an older concept.

Celestial Timetable for July

July	EST	
2	10:32 a. m.	Moon passes Mars
	9:00 p. m.	Earth farthest from sun, distance 94,451,000 miles
7	7:33 a. m.	Full moon
8	6:00 a. m.	Moon nearest, distance 222,800 miles
13	10:42 p. m.	Moon in last quarter
15	4:00 p. m.	Mercury farthest east of sun
	11:19 p. m.	Moon passes Jupiter
21	6:30 p. m.	New moon
22	11:26 a. m.	Moon passes Venus
23	3:00 a. m.	Moon farthest, distance 252,500 miles
	11:28 p. m.	Moon passes Mercury
27	11:03 p. m.	Moon passes Saturn
28	early a. m.	Meteors visible radiating from constellation Aquarius
29	8:51 p. m.	Moon in first quarter
30	1:32 p. m.	Moon passes Mars

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, June 28, 1952

The octopus may change color when startled, frightened or otherwise emotionally aroused.

To save paint on indoor wood, seal the wood surface with a thin coat of fresh, white shellac and allow to dry before painting.

BIOCHEMISTRY

Chemical Supplies Cancers With More Blood and Food

► A CHEMICAL from cancers that brings increased blood and nourishment to the malignant growth has been discovered by Dr. Kenneth G. Scott and associates at the University of California, San Francisco.

The chemical was extracted from cancers. Its chemical nature is still not completely known, but it is part of a protein molecule and resembles the adrenal gland hormone, adrenalin, or epinephrine.

Blood vessels supplying tumors are enlarged by this chemical and the clotting time of the blood is increased from four minutes to more than half an hour. Both these changes make it possible for growing tumors, or cancers, to rob normal tissues of nourishment from the blood.

In normal animals, Dr. Scott and associates found, blood makes up 5.4% of the body weight. In cancerous animals it makes up 7.1%.

Dr. Scott is now trying to identify the cancer chemical that gives the cancer more than its share of food. If this identification can be made, a way of destroying the chemical faster than the cancer can produce it might prove effective in checking the growth of cancers.

Science News Letter, June 28, 1952

ENGINEERING

Radioactive Cutting Tools Aid Research Engineers

► RADIOACTIVE CUTTING tools used in research machine shops are giving design engineers clues to the wearing qualities of the tools, and to the effectiveness of different cutting fluids, work materials and cutting conditions.

This was reported to the American Society of Mechanical Engineers meeting in Cincinnati by E. J. Krabacher, research engineer, M. E. Merchant, assistant director of research, and Hans Ernst, director of research, of the Cincinnati Milling Machine Co. They said that the application of radioisotopes to tool testing seems to hold promise for speeding up and simplifying the process of obtaining such machine-shop data.

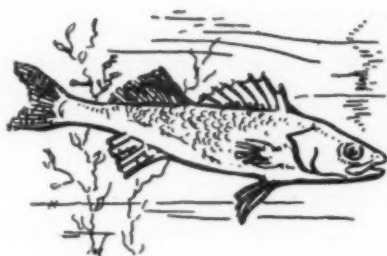
The method permits many more measurements to be taken in a given time and at less cost and with much less material.

Basically the testing process works like this: Cutting tools are irradiated in a nuclear reactor by neutrons. The tools then are used on metal-working machines to cut metal. A Geiger counter measures the radioactivity of the chips from the workpiece. The amount of the measured radioactivity is a direct measure of the rate of tool wear.

Since the rate of wear is essentially constant throughout the tool's life, a short test can yield a reasonable estimate of the tool's entire life.

Science News Letter, June 28, 1952

ICHTHYOLOGY NATURE RAMBLINGS



Fish Can Drown

► **RESPIRATION** IN fish is basically the same as it is in land animals, a matter of getting oxygen into contact with the blood corpuscles which will in turn get into contact with the body tissues that need it.

There are several ways in which fish can die for lack of oxygen. One is sheer mechanical interference with their normal mode of respiration, the ceaseless business of gulping water in through the mouth and expelling it through the gill-slits.

If a fish has a stick thrust through mouth and gills and is then dragged at abnormal speed through the water (as small boys often do), it will die, and it will die of drowning, that is, suffocation, because it can not "breathe" naturally.

A more wholesale extermination of fish through de-oxygenation of water takes place sometimes in summer, when fish that have been landlocked in a pond or lagoon find the water getting too warm and at the same time swarming with fast-multiplying small forms of animal and plant life.

Fish ordinarily do not live in a green stagnant pool because green water is poisonous. It is because the myriads of lesser organisms living there snatch up every available molecule of oxygen for themselves, so that there is none left to pass through the gill walls and enrich the fishes' blood.

This kind of minor tragedy of the water is relatively small-scale and unimportant, as compared with what the fish are often up against in rivers and lakes polluted by the outpourings of factories.

Sometimes these polluting agents are chemicals that directly poison the fish; much more often, however, they are things that the swarming bacterial life of inland waters can use for food. They do feed greedily, using up oxygen in the process, until again the turbid water will not support fish respiration.

In considerable areas in the tropics, small lakes and sluggish rivers go nearly dry in the hot season, and have so little oxygen in their water at all times that ordinary fish cannot live in them.

Principal inhabitants in such waters are lung-fishes, strange creatures that have given up the use of gills entirely and depend on air sucked into their swimbladders, which function as primitive lungs. When things get really bad these fish sink to the bottom, ball themselves up into mud cocoons and sleep the summer through as toads and turtles sleep through our winter.

Science News Letter, June 28, 1952

MEDICINE

Blood-Brain Barrier Lack

► **BABIES** AND young children are more likely than grown-ups to have convulsions because they lack a blood-brain barrier.

Evidence that this lack may be one factor responsible for the increased liability of infants and children to convulsive disorders comes from research by Dr. Alfred Froehlich of the May Institute for Medical Research of the Jewish Hospital Association, Cincinnati.

The blood-brain barrier apparently develops in the course of growing up.

Dr. Froehlich's experiments were made on rats. Up to 10 days of age, he found, rats got convulsions when the red dye, acid fuchsin, was injected under the skin. Older rats were not affected unless the dye was injected into their brains.

Bile injected into the bellies of young rats gave them fits but, again, older rats were not affected unless the bile was injected into the brain. Bile pigment, or coloring, can permeate the nervous system of

young rats from the blood but not that of older rats.

Theophylline, a chemical from tea which is also made synthetically, made grown-up rats get convulsions from injections of the red dye under the skin. This tea chemical is known to increase the permeability of isolated blood vessels and to increase the ability of many tissues to take up dyes.

Overdoses of vitamin D, Dr. Froehlich found, made young rats less susceptible to convulsions from the red dye and from bile. Theophylline countered this effect. But he does not suggest increasing the vitamin D given children in any attempt to reduce their susceptibility to convulsions. The doses needed to do this in the rats were so big that growth of the young animals was slowed, they became almost bald and their skin showed damage.

His report appears in the JOURNAL OF THE MOUNT SINAI HOSPITAL (May-June).

Science News Letter, June 28, 1952

GENERAL SCIENCE

Best Job Outlook for Chemists in Next Decade

► **HIGH SCHOOL** graduates are being urged to prepare for careers in chemistry or chemical engineering when they enter college in the fall.

The outlook for jobs in these fields during the next five to ten years is the best it ever has been, Charles S. Munson, chairman of the board of the Manufacturing Chemists Association, Inc., has reported.

He pointed to an increasing shortage in the number of chemists and chemical engineers who are available to the chemical industry. Also a factor, he said, is the fast growth of the industry over the past few years, a growth which will continue.

"In view of U. S. dependence on science for both military security and civilian living standards," Mr. Munson said, "the present and probable future shortage of trained chemists and other technologists has become a matter of real concern to the country at large."

Science News Letter, June 28, 1952

INVENTION

Patent Improved Alloys For Electrical Rectifiers

► **IMPROVED ALLOYS** of germanium, particularly for use in rectifiers of electricity, have been invented by Dr. Karl Lark-Horovitz and Randall M. Whaley, La Fayette, Ind., and assigned to the Purdue Research Foundation. Dr. Lark-Horovitz is head of the physics department at Purdue.

These alloys are all of the so-called N-type semi-conductors. They are made of germanium combined with such materials as copper, silver, magnesium, calcium, zinc, strontium, cadmium, barium, titanium, tin, lead, nitrogen, vanadium, columbium, tantalum, bismuth, chromium, uranium, cobalt, nickel or palladium. Patent number is 2,600,997.

Science News Letter, June 28, 1952

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Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N. W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

BASIC ASTRONOMY—Peter van de Kamp—*Random House*, 400 p., illus., \$3.75. A description of the solar system and discussion of the mechanics of the motions of stars and planets and their physical-chemical properties.

BIBLIOGRAPHY OF AFRICAN ANTHROPOLOGY 1937-1949: Supplement To Source Book of African Anthropology 1937—Wilfrid D. Hambly—*Chicago Natural History Museum*, 292 p., paper, \$1.50. Classified by author, subject and political region and including a list of 260 periodicals containing articles on African anthropology.

CRUELTY TO CHILDREN—Eustace Chessier—*Philosophical Library*, 159 p., \$3.75. Actual cases from the files of the British National Society for the Prevention of Cruelty to Children with recommendations of what society can do to remedy the situation.

DEAD CITIES AND FORGOTTEN TRIBES—Gordon Cooper—*Philosophical Library*, 160 p., illus., \$4.75. A world traveller uses archaeological discoveries, myths and folk tales to reconstruct the picture of ruined ancient cities and the peoples of long ago.

FLOWERS OF THE SOUTHWEST MOUNTAINS—Leslie P. Arnberger—*Southwestern Monuments Association*, 112 p., illus., paper, \$1.00. An introduction and aid to identification of common wild flowers arranged according to color.

GEOMETRY AND THE IMAGINATION—D. Hilbert and S. Cohn-Vossen—*Chelsea*, 357 p., illus., \$5.00. A translation of *Anschauliche Geometrie*. A presentation of geometry in its visual, intuitive aspects intended to bring about greater enjoyment of mathematics.

HEREDITY, RACE AND SOCIETY—L. C. Dunn and Th. Dobzhansky—*New American Library*, Rev. ed., 143 p., paper, 35 cents. New material includes discussion of the controversial "Lysenko theory". An index has been added.

HIGH SCHOOL BIOLOGY—Charlotte L. Grant, H. Keith Cady and Nathan A. Neal—*McGraw-Hill*, 2d ed., 813 p., illus., \$3.88. Basic prin-

ciples of plant and animal biology are here related to the high school student's own experiences. Excellent photographs add to clarity and interest.

ILLNESS AND HEALTH SERVICES IN AN AGING POPULATION—G. St. J. Perrott, Antonio Ciocco, George Bachr, Leonard S. Rosenfeld and others—*Govt. Printing Office*, PHS Publication No. 170, 68 p., paper, 25 cents. Our population is growing older and long-term, debilitating illnesses become increasingly prevalent with advancing years.

INTRODUCTION TO THE SCIENCE OF CHEMISTRY—Karol J. Mysels and Charles S. Copeland—*Ginn*, 521 p., illus., \$4.75. A first-year college text. The descriptive material is arranged by type of phenomenon rather than by element.

KING SOLOMON'S RING: New Light on Animal Ways—Konrad Z. Lorenz—*Crowell*, 202 p., illus., \$4.00. Whether you are a serious naturalist or just enjoy drawing birds to your backyard with lures of food and water, you will enjoy these charming stories and the delightful drawings with which the author has illustrated them.

LABORATORY MANUAL TO ACCOMPANY INTRODUCTION TO THE SCIENCE OF CHEMISTRY—Karol J. Mysels and Charles S. Copeland—*Ginn*, 31 experiments, illus., paper, \$1.75. On detachable pages punched to go into a notebook. Record sheets also included.

THE NATURE AND PROPERTIES OF SOILS: A College Text of Edaphology—T. Lyttleton Lyon, Harry O. Buckman and Nyle C. Brady—*Macmillan*, 5th ed., 591 p., illus., \$5.75. Drastically revised to incorporate the flood of new advances. A text for college sophomores and juniors.

THE NEW MAN IN SOVIET PSYCHOLOGY—Raymond A. Bauer—*Harvard University Press*, 229 p., \$4.00. The field director of Harvard's

Refugee Interview Project in Europe here shows how the Russian view of human personality has changed since the revolution and tells how the official party line defines what research should be done in psychology.

THE OXIDATION STATES OF THE ELEMENTS AND THEIR POTENTIALS IN AQUEOUS SOLUTIONS—Wendell M. Latimer—*Prentice-Hall*, 2d ed., 392 p., \$10.00. Study questions are included in the Appendix so that the book can be used as a text for advanced inorganic chemistry.

THE PEOPLE ELECT A PRESIDENT—Angus Campbell and Robert L. Kahn—*Survey Research Center, University of Michigan*, 73 p., paper, \$1.50. Report of a study carried out in connection with the election of 1948.

PSYCHIATRY AND MEDICAL EDUCATION—John C. Whitehorn, Chairman—*American Psychiatric Association*, 164 p., \$1.00. Reporting the 1951 Conference on Psychiatric Education, including the recommendations for broadening the biological concepts of medical students so that they can see patients as whole persons.

SYMMETRY—Hermann Weyl—*Princeton University Press*, 168 p., illus., \$3.75. Displaying the great variety of applications of symmetry in art and in nature and explaining the philosophical-mathematical meaning of symmetry. For the general reader who is not allergic to some mathematics.

THE THEORY OF RELATIVITY—C. Moller—*Oxford University Press*, 386 p., \$7.00. An account of the classical theory of relativity in which all quantum effects are disregarded. A text for advanced physics students, by the professor of mathematical physics at the University of Copenhagen.

THEORY OF SUPERCONDUCTIVITY—M. von Laue, translated by Lothar Meyer and William Band—*Academic Press*, 140 p., illus., \$4.00. A book for physicists originating in the Kaiser-Wilhelm Institut of Berlin.

THE WORLD VIEW OF PHYSICS—C. F. v. Weizsacker—*University of Chicago Press*, 219 p., \$3.75. A philosophical work written by the German scientist over a period of years as the ideas of the author and his colleagues developed.

Science News Letter, June 28, 1952

ERRATA, Vol. 61, Nos. 1-26, January-June, 1952

PAGE	TITLE BEGINS	CORRECTION
34 66 & 69	Most Powerful X-ray Cover Picture	Used on animals only at present. The butterfly is a Variegated Fritillary, not a Painted Lady. See SNL 2/16/52, p. 102.
122	Springtime Constellations	Col. 2, par. 5, line 9, 227,070 for 277,070.
131	Air Used	Par. 6, line 7, alloys for metals.
134	Picture Drawings	Par. 5, line 1, after tried, delete first.
147	Morphine Synthesized	Par. 1, line 6, read Swiss scientist, Dr. Gilg Tschudi, assisted; par. 4, line 2, Dr. Tschudi for Miss Pechudi.
185	Instrument Holds	Par. 2, line 3, Johansen for Johnansen.
213	Alcohol from	Par. 1, line 2, for price read raw material cost. Par. 2, line 5, after concentration for insert conversion into.
284	Nickel-Plated	Par. 2, lines 3-4, Belleville, N. J., for East Hartford, Conn.
294	Metals Melted	Par. 3, line 4, coaxial for conical.
298	Unusual Metals	Col. 3, Par. 5, line 3, for "it" read "a boundary between germanium and a metal;" line 4, for "it" read "a germanium device."
336	Do You Know?	Par. 3, read There are snakes in Madagascar but no poisonous ones.

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ACOUSTICS

Noise Level of Cities

► **LIFE IN** modern American cities, with increasing traffic and industrial activities, will be easier to bear as methods of reducing the man-made noises are developed.

The problem, long recognized, is now receiving scientific attention, the first step being the measurement of the loudness of the various noises, the second how the loudness can be decreased.

A four-year study, made in Chicago by scientists of the Armour Research Foundation of the Illinois Institute of Technology, has uncovered facts not previously known. Traffic noise affects more people than the noises created by industrial plants, the study shows. Traffic noise is more prevalent and is also louder than industrial noises, particularly in Chicago.

Motor trucks and coaches stand first among the noise makers in traffic, the trucks occupying the first place. Much has already been done to reduce street car noises, the modern street car being far more quiet than the types in use a few years ago. Railroad trains and elevated railways in the cities where they exist are also heavy noise makers.

Passenger automobiles, especially when new, are not accused in the Armour report of being noisy although some have insufficient or defective silencing devices, especially at low speeds. All motor vehicles become more noisy as they increase in age. Trucks and coaches are most offensive when starting and accelerating.

Industrial noises come largely from factory machinery and construction activities. Many factories, however, do not use machines that create loud noises. One-story buildings are said to give out less noise than those of the multi-story type. Trees, shrubbery and grass around the factory are suggested as possible means of reducing the noises that otherwise might reach neighboring homes.

The field studies made by the Armour Foundation in various parts of Chicago used the "sone" as a unit of loudness. The decibel, a widely used sound unit, measures only the intensity of a noise. It is the loudness that is most objectionable to the human ear.

Science News Letter, June 28, 1952

ENTOMOLOGY

Inspect Plane Passengers

► **IF AN** airplane hostess looks you over carefully for decorative green and brown beetles trying to stow away, don't be alarmed.

For travelers as well as trucks of vegetables are being suspected of harboring the Japanese beetle, a pest in seven eastern states and the District of Columbia. An embargo is now in effect.

Eventually this pest which invaded New Jersey from Japan sometime before 1916 may reach all parts of the United States, but U. S. Department of Agriculture control measures are trying to slow its progress.

The regulations are aimed at halting the annual beetle blitz on garden truck crops, flowers and fruit trees, causing damage amounting to hundreds of thousands of dollars each year.

Although not a pest of economic importance in Japan, the insect has found conditions and the lack of natural enemies here ideally suited for rapid multiplication and spread. In spite of all man's efforts, the Japanese beetle-infested regions marked off on U. S. Department of Agriculture maps as shaded areas continue to grow each year.

During 1951 more than 1,700 localities, including important military and commercial airfields, were scouted in 36 states. One or more beetles were found in 209 localities in 15 states. None was found in

or west of the Great Plains states except for one beetle near the Los Angeles, Calif., airport.

Railroads, truckers and produce shippers in Delaware, the District of Columbia, New Jersey and certain counties in Maryland, New York, Pennsylvania, Virginia and West Virginia are subject to the quarantine.

Shipments of fresh corn on the cob, cabbage, apples, peaches and fresh beans in the pod, moving interstate to non-beetle areas, must be inspected or fumigated, according to the new regulations.

Science News Letter, June 28, 1952

METEOROLOGY

Warm Over Most of Nation Until Mid-July

► **MOST OF** the nation can get set for warmer weather than usual until the middle of July. This is the prediction of the Weather Bureau's Extended Forecast Section.

Only the Far West can expect its weather to be cooler than normal before July 15. New England, Florida and along the Gulf Coast will have about the usual temperatures.

Along with warmer weather will go less rain for much of the nation. However, in the northern third of the country and in

the Rocky Mountain states, frequent but brief showers are expected to produce normal or greater than normal amounts of rain prior to mid-July.

Science News Letter, June 28, 1952

ANTHROPOLOGY

America First Peopled in Many Waves of Migration

► **AMERICA WAS** first settled by people from the Old World as long ago as 10,000 years, but that was only the first in a long series of waves of migration.

Immigration was greatly stepped up about 3,500 to 4,000 years ago, when greatly increased numbers came to these shores and spread out over the whole continent.

This is the conclusion reached by Dr. Frank H. H. Roberts, Jr., of the Smithsonian Institution.

These early "displaced persons," were probably not political refugees, Dr. Roberts surmises, but were probably drawn, as were our own ancestors, by the promise of an abundant life.

Evidence of the early immigration waves is found by Dr. Roberts in the carbon-14 dates found for samples gathered from ancient sites.

The oldest samples are about 10,000 years old. There are only a few of these concentrated in the western part of the country, mostly along the eastern edge of the Rockies.

There is another group of samples with dates between 8,000 and 8,500 years old. These are from the western Plains area and the Humboldt Valley. Another group is in the neighborhood of 7,000 years old.

But beginning about 3,500 to 4,000 years ago, another group is found. These are by far the most numerous and are scattered all over the country, indicating a great expansion of population as well as a movement of peoples all over the country.

Science News Letter, June 28, 1952

NEW! NATIONAL SPRAYER



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• New Machines and Gadgets •

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❁ **AUTOMOBILE TOY** for children is about the size of a portable phonograph and has a dashboard containing a steering wheel, horn, gear shift and starter. As the child "drives," a plastic car on top of the toy shows exactly what moves the driver has made. The electric device can be used as a game to teach Junior to obey traffic rules at an early age.

Science News Letter, June 28, 1952

❁ **FLOOR COATING** based on vinyl resins economically protects hardwood floors subject to heavy wear. The non-slippery substance provides good traction for athletes on gymnasium floors, but the floor can be sprinkled with corn meal or powdered wax to slicken it for dancing. Cigarettes dropped on the coating will not char the wood underneath.

Science News Letter, June 28, 1952

❁ **CEMENT SMOOTHER** made of durable pressed wood material lasts longer and does a better job than many handmade wooden cement-finishing floats. Equipped with a handle, the float requires no preliminary roughening of the working surface before use.

Science News Letter, June 28, 1952

❁ **BAR MAGNET**, non-electric, can retrieve rifles, shot-guns, pistols, knives and other metallic objects obscured from view in muddy river beds. Made of permanent magnets bolted to form a unit 1 inch thick, $3\frac{1}{2}$ inches wide and 24 inches long, the cadmium-plated assembly is handled by light ropes and has a long life in both fresh and salt water.

Science News Letter, June 28, 1952

Do You Know?

Insects destroy enough U. S. wheat in storage each year to fill the annual wheat needs of at least 16,000,000 persons.

Hay put up under favorable weather conditions without rain may contain 18% to 21% protein; the same hay, if damaged by rain, may contain only 11% protein.

A new tin-nickel combination that looks like chromium has been found to be a satisfactory electroplate for automobile parts, domestic metalware and electrical appliances.



❁ **CARBOY BOTTLES** for shipping poisonous or corrosive chemicals safely are blow-molded of a light-weight, polyethylene plastic as shown in the photograph. The containers are so rugged that the steel treads of a 10-ton bulldozer failed to damage

empty 13-gallon size bottles during tests. Available in sizes ranging from 13 gallons to one ounce, the vessels will not break if the fluid inside freezes.

Science News Letter, June 28, 1952

❁ **CLOSET LIGHT** burns automatically as soon as the door is opened and goes out when the door is closed. The assembly comes complete with a mounting bracket and nine feet of cord.

Science News Letter, June 28, 1952

❁ **FOLDING SEAT** is made of a steel frame covered with canvas and is hooked over bleachers, picnic table seats or other bench boards to provide a comfortable back support. The easily attached unit rolls into a small light-weight package when not in use.

Science News Letter, June 28, 1952

❁ **COMPOSING MACHINE** photoprnts a variety of type styles and sizes on a 35 mm. paper film. The desired headline or body copy is dialed on the compact machine's letter selector, and negative disks for various styles and sizes produce the letters.

Science News Letter, June 28, 1952

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ACTH	130, 140, 200
AEC	402
Abbott, R. Tucker	168
Ackoff, Russell L.	2
Acoustics	294
Adams, Floyd	405
Adams, Gail D.	34
Adams, Roger	3
Adaptation	281
Adhesions	391
Adhesive tape	112
Adrenal removal	244, 328
Aeropause	150, 200
Air conditioning	160, 208
Air filter	116
Air location	349
Air rescue suit	366
Air safety	64
Air scoop	296
Aird, Robert B.	350
Airfields, Noise on	258
Airliners, Turbo-Prop	370
Airplane fueling	62
Airplane wing	117, 121
Airplanes	28, 40, 42, 93, 95, 102, 165, 211, 261, 277, 313, 373, 381, 404
Airways	364
Alarm clock	104
Alaska	277
Alaskan Highway	98
Albright, W. F.	296, 323
Alcohol	102, 213, 264, 310, 312
Alcoholic test	370
Alcoholics	13, 326
Alexander, Sam N.	8
Algae	21, 149
Allen, C. W.	195
Allen, J. Garrott	367, 372
Allen, L. H.	15
Allergy	397
Alloys	52, 70
Altimeter	136, 180
Aluminum coating	387
Amebic dysentery	55
Amer, Myrtle A.	88
America, First settlers	411
America, Discovery of	27
Amethopterin	249
Analyzer indicator	199
Andersen, Joseph T.	271
Anderson, Arthur B.	358
Anderson, Hamilton H.	55
Anderson, Lauren D.	267
Anderson, L. J.	297
Anderson, Pamela	11
Anderson, R. J.	358
Andrews, John	344
Anemia	201
Anemone	188
Anesthetics	265
Anfinsen, Christian B.	265, 355
Animals	194
Anthony, Harold E.	229
Anthrax	63
Antibiotics	2, 66, 67, 159, 213, 231, 313
Antibiotic sterilizers	119
Antigens	376
Antihistamine	196
Antonucci, Rose	105
Anis	72
Anxiety	89, 153
Appendicitis	73
Apron	208
Apter, Nathaniel S.	328
Arab countries	69
Arabia	296
Arctic	378
Arctic airmen	41
Armsby, H. H.	30
Armstrong, Charles	291
Arteries	34
Arthritis	6, 197, 373, 377
Aschenbrenner, Claus	35
Astin, Allen V.	342
Atabrine	68
Atherosclerosis	355
Atherton, George H.	230
Atmosphere, Upper	351
Atmospheric pollution	148
Atom bomb effects	280
Atom models	208
Atomic accelerator	337, 341
Atomic bomb	57
Atomic bomb victims	271
Atomic energy	371
Atomic energy informa-	258
tion	196
Atomic explosion	273, 275
Atomic pile simulator	185
Atomic power	24
Atomic radiation	162
Atomic reactor	147
Audiometer	317
Auer, Essie Jane	215
Aureomycin	118
Aurora auralis	279, 295

Automatic pilot	71, 89, 167
Automobile	14, 224
Automobile, Toy	412
Aviation fuel	214
Avia, Frederick R.	91
Azazol	332
BAL	391
Babecek, Glen E.	41
Babies	24
Bacon, O. G.	8
Bacteria	328
Badge, Poultry	240
Baffle rings	119
Baffles, Sound	144
Baker, James	35
Baker-Schmidt telescope	115
Balance	343
Baldes, Edward J.	207
Baldini, A.	73
Baldness	391
Bandage, Two-way	287
Banham, Katharine M.	152
Banthine	397
Bardach, John E.	37
Bardeen, J.	138
Bargehr, Herman J.	396
Barghausen, John W. B.	180
Barker, Harry H.	291
Barnes, Frederick A.	5
Barr, M. J.	242
Barrett, Thomas F.	44
Barrie, Ralph W.	66
Bart, S. G.	284
Bartemeier, Leo H.	72
Baseball players	255
Basic Seven	284
Bat god	111
Bathing suit	48
Battery	96, 400
Battery caps	384
Battery separator	358
Batley, Louis L.	310
Beach, Frank A.	216
Beach hardener	402
Bean, Louis H.	328
Beard, Raimon L.	300
Beaudoin, Rachel	263
Bechwith, Sterling	55
Beck, A.	102
Beck, Alice E.	117, 172
Bed	32
Bed lengtheners	57
Beecher, William J.	377
Bees	54, 55
Beiler, J. M.	252, 271
Bell, Barbara	324
Bell buoy, Toy	400
Belmont, Morrison H.	88
Belt, Augustus H.	100
Benadryl	66
Benedek, Therese	383
Benioff, Hugo	38
Bennett, George W.	281
Bennett, H. S.	311
Berger, J.	67
Berliner, Harry M.	332
Berries	9
Berry, L. J.	45
Betcher, Albert M.	392
Biamonte, Alfred R.	19
Bicillin	392
Bicycle safety	204
Bideaux, R. A.	172
Biological warfare charges	348
Bird, H. R.	242, 251
Bird-scafer	37
Birds	44, 47, 169, 372
Birth certificates	216
Births	402
Bishop, C. A.	148
Bishopp, F. C.	330
Bittner, John J.	232
Black, Robert F.	114
Blades, Brian B.	34, 360
Blanket	79
Blatchford, George	76
Blinking	205
Blisters	205
Blomberg, Rolf	293
Blood	359
Blood-Brain barrier	409
Blood cells	40, 329
Blood groups	30
Blood pack	304
Blood pressure	265
Blood storage	405
Blood transfusions	196
Blood vessel bank	305, 314
Blowmobile	339
Boak, Ruth A.	268
Boat, Mary B.	133, 172
Bodian, David	259
Boegehold, Alfred L.	387
Boekelheide, Virgil	404
Bohn, J. Lloyd	195
Boland, Edward W.	197

SCIENCE NEWS LETTER

Index—Vol. 61

Nos. 1-26—January to June, 1952

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Lift out and insert in binder at beginning of volume.

Errata appear on p. 410

Brodofsky, Max	93
Brooks, Edward M.	212
Brooks, F. A.	264
Brooks, Reid M.	56
Broom	297
Brouwer, Dirk	9, 357
Brown, Harrison	213
Brown, T. C.	152
Brown peach rot	124
Brucellosis	167, 248, 287, 347, 376
Brucer, Marshall	343
Brues, Austin M.	130, 214
Brush, Paint	208
Brush support	304
Brushes, Scrub	176
Brushes, Wallpaper	112
Bruton, Ogden C.	359
Bruun, Anton F.	259
Bruwer, J. A.	255
Bryson, V.	312
Ruckey, Jefferson P.	237
Ruckwalter, Geoffrey R.	5
Buds	172
Ruetner, Konrad J. K.	396
Bugental, James F. T.	44
Bucher, John C.	280
Bullene, E. F.	124, 348
Bulletwood	335
Bumper guard	96
Burchenal, Joseph H.	349
Burette	272
Burner	16
Burnett, Lee	271
Burnight, T. R.	195
Rusang, Paul	51
Ruscombe, William	20
Rush, Vannevar	392
Rutler, A. P., Jr.	152
Rutler, Glenn F.	108
Rutt, Arthur J.	194, 397
Byrne, John J.	198
Caldwell, Robert H.	350
Cannon, C. G.	361
Cantoni, Giulio L.	198
Caponera, George H.	121
Carbon brush	391
Cardozo, W. Warwick	348
Carlson, Harold	360
Carmichael, Leonard	246
Carmick, Louis G., Jr.	14
Carob	152
Carpet	96
Carrier, Leonard E.	8
Carroll, Thomas J.	297
Carry-All	160
Carson, Robe B.	9
Carter, Anne C.	373
Cartwright, Paul A.	403
Cassin, Benedict	44
Cat	375
Catalyst	128
Cataracts, Eye	40
Caterpillars	124
Caves, R. M.	214
Cedar compound	176
Cement smoother	412
Ceramics	116
Cesare, S. J.	367
Chace, Fenner A., Jr.	71
Chalberg, H. W.	168
Chalk, Fluorescent	208
Chang Shan	39
Chapin, Edward	162, 168
Chapman, H. D.	57
Charney, Jule G.	179, 386
Cheese flavor	249
Chemicals, Rare organic	393
Chemists	409
Cheney, Marshall C.	281
Chest pain	264
Chickens	251
Chippewa customs	89
Chironomid	121
Chloromycetin	63, 297
Cholesteryl	23, 25, 271
Cholinesterase	99, 323
Christiansen, R. G.	14
Chrysanthemums	8
Chu, George W. T. C.	120
Church, James M.	213
Circle cutting	64
Circuit analyzer	48
Circuit breaker	405
Circuit synthesis	258
Citrus	46
Clare, Jeanne E.	24
Clark, Ellen	178
Clark, Leland C., Jr.	309
Clarke, P. S.	63
Clausen, Curtis P.	188
Cleaning mitten	64
Clifford, Eugene E.	40
Climate	9, 357
Cline, J. K.	329
Clisby, Kathryn H.	335
Clothing, Inflammable	63, 213, 345
Clothing sizes	396
Cobalt 60	121
Cobb, Stanley	215
Cochran, Doris M.	179
Cohen, I. Bernard	283
Colbert, L. O.	278
Colds	281
Cole, Harold N., Jr.	391
Coleman, Robert W.	117

Colitis	41, 376
Collar stays	288
Collins, R. A.	260
Color vision	212
Colwell, J. F.	297
Comet	5, 104, 115, 255, 338
Communications	217, 316, 373
Communism	2
Compass	386
Composing machine	412
Compound F	197
Compressor stator blades	135
Compton, Karl T.	19
Computers, Electronic	8, 53, 73, 168, 179, 211, 386, 393
Conant, James B.	114, 258, 283
Concrete	56, 150
Condit, I. J.	37
Condon, Edward U.	10, 230
Conklin, Edwin G.	22
Conservation	318
Contact lens halos	120
Containers, Ice cream	361
Conveyor belt	394
Convict brain waves	324
Convulsions	94
Cooper, Edwin L.	281
Cooper, Hugh S.	70
Cooper, Linn F.	293
Corder, Stanley E.	230
Corn	8
Corn earworm	267
Corn pollen, Ancient	365
Cornbleek, Theodore	397
Cornmann, Ivor	15
Corrosion prevention	345
Cortisone	76, 98, 200, 248, 253, 380, 391
Cosmic rays	66
Cosmotron	387, 341
Costume needle	288
Cot	384
Cotton	34
Cowgill, George R.	76
Cowie, Dean	162
Coxsackie virus	268
Coy, Herbert D.	153
Coyotes	92, 151
Crabs	71
Crane, H. L.	106
Crane, Julian C.	56
Crary, Albert P.	351
Cream	79
Creamy, William M.	322
Creation of matter	96
Creeper	400
Crib	6
Cronkite, E. P.	27
Cross, Frank C.	109
Cross eyes	349
Crossings, Pedestrian	98
Crow	300
Crozier, W. D.	364
Cuff links	368
Curtis, Arthur C.	399
Cushing, John E.	245
Cutting tools, Radioactive	408
Cyclotron	156
DDT	89
Dabiez, Carlos	69
Dailey, Ulysses Grant	340
D'Alelio, G. F.	77
Dameshek, William	200
Dandelions	204
Daniels, Farrington	73
Danowski, T. S.	291
Danzys, M.	165
Darrow, George M.	8
Davidson, Charles S.	329
Davidson, J. L.	66
Davis, Watson	162
Dawson, Mary Ann	162
Deafness, False	70
Death	13
Death certificates	216
deBettencourt, J. T.	291
de Boer, Carl J.	378
Decca	116
Defense	42
Dehumidifier	304, 384
De-Icing	112, 370
de la Balze, F. A.	376
DeLamater, E. D.	297
Dennett, Firth L.	386
Dental instrument, Rat	185
Denton, C. A.	242
Depth finder	398
DeRoy, M. S.	342
Desert areas	323
Desk	286
Detergents	164
Deterling, Ralph	311
de Terra, Helmut	164

Detweiler, A. Henry	243	Eyestone, Willard H.	375	Gall bladders	184	Hanley, C. N.	70	Hydrocortisone	105
Deutsch, Martin	313			Gallium	298	Hannahs, W. H.	203	Hydrogen	94, 243
Devine, John W., Jr.	391			Gambing	232	Hansen, J. M. Vinter	338	Hydroponics	57
Diabetics	40			Garage	396	Hanson, F. R.	55		
Dial light	288	Facsimile	68, 87	Garand, John C.	169	Haq, M. O.	159		
Diaz-Rivera, R. S.	27	Failla, Gioacchino	215	Garand rifle	169	Hare, Hugh F.	217		
Dictation system	352	Family life	342	Gardening	170, 200	Hargrove, Eugene A.	332	Ice Ages	19
Diebert, C. R.	68	Fan	112	Gardner, Dwight E.	169	Harned, B. K.	258	Ice cream freezer	383
Dieckmann, William J.	14	Fanfish	315	Gas, Natural	249	Harness	16	Ice gatherers	355
Diet	14, 57, 70, 263,	Farrall, Arthur W.	15	Gas turbines	216	Haro, Guillermo	155,	Ice Islands	359
Di Figlia, Samuel E.	140	Fat Men	44	Gas war scares	124		181, 245, 283	Icebergs	234
Digitoxin	264	Fear	108	Gasoline	77	Harrell, James A.	373	Identification tags	272
Dihydrotriazines	136	Fear indicator	371	Gates, Marshall	147	Harrell, Ruth F.	118	Incubator	360
Dillaha, Calvin J.	391	Feeding, Emergency	360	Gauge	79	Harrington, Robert G.	104	Indonesia	61
Dimethylane	54	Feinstein, Joseph	297	Gauge, Atomic	344	Harris, Daniel L., III	25	Infantile paralysis	9, 50,
Dirac, P. A. M.	95	Fences	400	Gebbie, H. A.	561	Harris, Robert S.	70		71, 259, 291, 300,
Discrimination	185	Fenyo, Julius	5	Geiger counter	133	Harrison, Tinsley R.	399		312, 351, 363, 404,
Diseases	54	Ferris, Harry E.	196	Geisbert, Bunny	343	Hartmann, H. Rodney	134	Influenza vaccine	403
Diseases, Children's	316	Fertility	383	Gene, Lethal	180	Harvey, E. Newton	13	Injuries	265
Diseases, Tropic	43	Fertilizer	12,	Genes	405	Hass, George M.	237	Inn, Edward C. Y.	109
Dish washing	344	Fibers, Synthetic	280	Gerber, S. R.	13	Hassocks	32	Insect sprays	114
Displaced Persons	359	Fieser, Louis F.	198	Gerloff, Gerald	149	Hatch, F. W.	184	Insecticides	75, 184,
Dobzhansky, Theodosius	2	Figs	372	Germanium	169	Hatfield, H. Stafford	44		280, 300, 342,
Dodd, Norris E.	376	File	272	Germanium alloys	409	Haurwitz, Bernard	120	Insecticides, Systemic	330
Dodson, Austin I.	397	File trays	320	Germs in brain	137	Hauska, Theodore S.	180	Insecticides, Taggel	402
Dog house	76	Fillings, Plastic	153	Geyser	39	Hauser, Ernest A.	194	Insects	89, 188,
Dog trainer	64	Filter, Germ detecting	322	Ghoneim, Zakaria Bey	187	Hazelhof, E. H.	56		355, 396
Dogs	178, 182	Filter, Glass	38	Ghormley, Ralph K.	72	Hedges	75	Instrument, Fault-finding	192
Doll	115	Finish measure	126	Gibbon, Samuel Y.	360	Headley, Nathan E.	197	Instruments, Crash record	207
Domenjoz, R.	262	Fireflies	13	Gigot, Albert F.	599	Hearing	73, 181	Insulators	118
Domestic animals	156	Fish	21, 37, 56, 179,	Gilbert, Nathan	213	Hearing loss	137	Intestinal obstruction	391
Door Mat	95		245, 281, 386, 397,	Ginsborg, B. L.	205	Heart	280	Intestinal sickness	47
Doors, Roll-up	144	Fish, eyeless	259	Ginsburg, Benson E.	20	Heart, Artificial	309	Iron Lung	95
Dosimeter	16	Fish lure	336	Ginsburg, Sol Wiener	375	Heart disease	105, 264,	Ironing pad	48
Draft	114	Fisher, Harry	343	Glacier	88	Heart-Lung, Artificial	387	Irrigation	185, 328
Drain Cleaner	192	Fishing flag	383	Glass, Heat-absorbing	288	Hearts	382	Irving, George W.	34, 54
Dramamine	41	Fischelli, V. R.	217	Glasser, R. F.	89	Heater	48, 320, 326	Irwin, C. E.	9
Dream	96	Fitzgerald, George	149	Glasses	11, 400	Heating, Dual-fuel	184	Irwin, John B.	5
Drilling, dentists'	253	Fitzgerald, L. K.	280	Glaucoma	92	Heinle, Robert W.	232	Isbell, Horace	148, 162
Dromoran	215	Fjortoft, R.	179	Glover, L. Pellman	48, 144, 490	Helicopter	195, 359	Isolation boxes	352
Drug addiction	237	Flame cultivator	168	Gloves	48, 144, 490	Helium	297	Isometric drawings	134
Dryden, Hugh L.	281	Flanders, Stanley E.	72	Glue, Soybean	41	Heller, John H.	243	Isoniazid	230, 312,
Dublin, Louis J.	71	Flash Guard	32	Gluing unit	160	Helmet	201		313, 357, 358, 406
Dubos, Rene J.	312	Flat tire indicator	303	Glutamic acid	20	Helmsworth, James	309	Isotopes, Radioactive	24
Duggar, Benjamin	39	Fleming, William E.	200	Goerditz, Hans	115	Hendricks, S. B.	81, 87,	Issawi, Charles	69
Dunlop, James	149	Fletcher, Joseph O.	359	Goff, Charles Weer	15	Hendrix, Don	250	Ives, Norton C.	276
Dunning, James M.	325	Flood forecasts	373	Gold, T.	95	Henroteau, Francois			
Duplicator	48	Floods	328	Goldberg, Benjamin J.	229	Charles Pierre	121		
Duran-Reynals, F.	39, 115	Floor coating	412	Goldberg, Julius B.	280	Henry, A. W.	66	Jackson, H. R.	130
Duran-Reynals, M. I.	39	Floor surface	96	Goldberg, Leo	6	Henry, J. P.	194	Jacobsen, E.	102
Durang, Edwin F.	149	Floor wax insecticide	128	Goldstein, David A.	118	Henson, W. R.	374	Jacobson, Leon O.	255, 372
Durham, William F.	280	Flory, L. E.	303	Gophers	374	Heparing	278	Jaffe, Henry L.	392
		Flower petals	332	Gordon, Harold	75	Herbst, George H.	43	Jahns, Richard H.	283
		Flowerpot covers	176	Goss, Worth C.	46	Herbst, John A.	194	James, William T.	182
		Fluoridated salt	261	Gossner, Joseph L.	4	Herbet, P. G.	342	Jamieson, C. A.	55
Earth, size of	11	Fluoridation	169	Grain spoilage	276	Herget, Paul	115	Japan	37
Earthquakes	38, 167, 247	Fly swatter	64, 320	Grandmas	357	Hermes, Doris Jean	307, 311	Japanese beetles	411
Ebeling, Dolph G. P.	8	Flying Saucers	375	Grant, R. T.	29	Herrndon, C. Nash	405	Jar, Document	183
Eble, E. J.	55	Flynn, Leonard J.	383	Grapefruit	76	Hess, Frederick O.	50	Jasperson, Robert	201
Eckert, W. J.	9, 28	Flynn, Paul D.	399	Grasslands	252	Hesseltine, C. W.	12	Jeans, Philip C.	156
Eclipse	58, 243, 381	Foam, Plastic	185	Grease, Silica gel	181	Hewlett, P. S.	300	Jeep, Snorkel	204
Eddings, Charlotte A.	134	Food foibles	375	Green, Jack C.	211	Heyden, Francis J.	101	Jeeps	21
Eddy, Edwyn A.	102	Food, Future	1, 10	Greene, Harry S. N.	121	Hiatt, William	373	Jepson, Carl E.	21
Eddy, N. B.	93	Food and mouth disease	157, 281	Greenham, M. A.	386	Hiccups	399	Jernstedt, George W.	291
Eddy, Walter H.	248			Greenfield, C. G.	248	High-Chair apron	121	Jet engine	137
Edgerton, Milton	314	Foot-warmer	32	Greens	159	Hilger, M. Inez	89	Jet planes	22
Edwards, Ward	232	Forecast results	184	Greystone, Reynold	47	Hilliard, J. F.	24	Jettliner	183, 280, 388
Egeberg, Birger	236	Forgays, Donald G.	406	Greiff, Donald	121	Hilton, W. F.	60	Jewers, J. M. E.	73
Egg cooker	336	Fossils	344	Griffin, Donald R.	240	Hips, Diseased	88	Jig	272
Egg transplantation	91	Foster, George B.	316	Griffith, Alan Arnold	365	Hirsch, James G.	312	Joffe, J. S.	12
Eggen, Olin J.	131, 355	Foster, Helen L.	178	Grip	133	HOBSON	316	Johansen, Erling	185
Eggs	393	Fox, Bernard H.	313	Griswold, Ralph E.	2	Hockberg, Julien E.	212	Johansen, Clarence M.	125
Egloff, Gustav	242	Fox, Herman Herbert	292	Grosse, Aristid V.	101	Hockman, Bruce I.	252	Johnson, E. O.	181
Eikholm, Gordon	27	Frajola, Walter J.	303	Grouse	329	Hodgkin's disease	292	Johnson, Frederick	98
Eklstein, Rudolf	326	Franks, Joseph	230	Groves, Gordon	270	Hoe	256	Johnson, W. S.	14
Elasticity tester	96	Fred, Walter	22	Growth, 12, 15, 164,	261	Holland, Albert H., Jr.	24	Jonas, Julius	137
Electric Appliances	201	Freedom, Scientific	56	Growth, Fruit tree	101	Hollander, Joseph L.	6	Jones, G. E. Seegar	389
Electricity from atom	371	Freedom of intellect	60	Gruber, Charles M., Jr.	178	Holman, Russell L.	25	Jones, Herbert L.	69
Electron micrograph	357, 403	Freezer	168	Guar, Paul L.	178	Holzman, B. G.	57	Joy, Alfred H.	20
Electron microscope	140	Friction Heat	187	Guarino, John R.	26	Honor graduates	118	Judgment	56
Electronic megaphone	325	Friedmann, Herbert	409	Guarino, Louis J.	181	Hooker, W. W.	172	Judkins, M. F.	197
Electroshock therapy	217	Frings, Hubert W.	225, 233	Guided Missile	335	Horn, Roy A.	134	Judy, Kenneth	281
Electrostatic demonstrator	128	Froehlich, Alfred	130, 179	Guild, Elizabeth	216	Horne, Charles F.	309	Jung, Rodney C.	68
Electrostimulation	332	Frog, Tree	231	Gulley, Wayne E.	38	Horse meat test	121	Jupiter	118
Ellis, Elizabeth E.	57, 100	Frogs	69	Gurvitz, Milton S.	259	Horstmann, Dorothy M.	328	Jupiter XII	90
Ely, C. M.	164	Fromm, Herbert J.	264	Gutenberg, Beno	396	Hose connector	160	Kagan, J.	216
Emerson, Ernest B., Jr.	339	Frume, K. D.	56		101	Hospitals	376	Kaiser, H. E.	218
Engelberg, Hyman	264, 278	Fruit	60	Haber, Heinz	253	Hot seat	108	Kaneelhart	151
Engels, Willard H.	72	Fruit oil	228	Hagen, J. P.	162	Howard, Walter E.	374	Kangaroo	369, 377
Engine, Experimental	348	Frustration	308	Haley, Robert J.	338	Hubbard, Harvey H.	356	Kanner, Leo	344
Engines, Automobile	130	Fuel, Flameless	263	Haley, Thomas J.	7	Hubbell, B. E., Jr.	184	Kapitz, Peter L.	361
Englebrecht, Alfred	2	Fuel ignition	73	Half-Ape	100	Hudson, E. Herndon	104	Katz, Louis N.	399
Engstrom, E. W.	19	Fugill, A. P.	131	Hall, John S.	54	Hudson, Perry	216	Katzin, Martin	297
Epidemic, Korea	153	Fuller, John L.	328	Hamburgers	216	Huggins, Charles B.	244, 314	Katznelson, H.	55
Epilepsy	258, 313, 383	Fulz, Dave	55	Hamilton, James R.	134	Hulbert, Edward O.	101, 243	Kaufman, R. S.	217
Epstein, Eugene E.	118	Fumagillin	149	Hamsters	79	Humidity	269, 376	Kaveler, H. H.	1
Ergen, William K.	398	Fungi	73	Handbag	233	Hunger, World	95	Kellogg, Charles E.	328
Erickson, Louis C.	46	Fungicides	293	Handicapped persons	344	Hunsaker, J. C.	297	Kellogg, Remington	162, 165
Erosion	37	Funkhouser, John W.	75	Handley, Charles O., Jr.	168, 344	Hunter, M. E.	21	Kelly, E. J.	347
Esophagus	360	Furmanski, A. R.	311	Hangover	313	Hurricanes	329, 357	Kennard, Margaret A.	324
Estrone	14	Furth, Frank W.	3	Handrail	16	Hutchinson, Howard B.	57	Kennedy, John L.	283
Evans, Clifford	111	Future, Man's	191	Hands	89	Hyaluronidase	194	Kent, Edward	153
Evans, J. W.	101, 243	Gagnon, Fabien	375	Hangover	54	Hydrocarbon	69	Kessel, John F.	43
Evenhuis, H. H.	56								
Ewing, Maurice	19, 147								
Exhaust, Gas engine	327								
Explosion, Aluminum	67								
Explosions	21, 217								
Extra-Sensory Perception	217								

94, 243	Kessler, Henry H.	34	Logarithm Tables	296	Miller, Joseph M.	333	O'Connor, Basil	95	Planets	9
57	Kester, Ernest B.	140	Lomax, Clarence E.	126	Miller, Wilford L.	201	Odgers, G. J.	15	Planets, Minor	25
	Khalifman, I.	54	London, Ivan D.	2	2 Milman, Jacob	249	Oftebro, William S.	200	Plant cell wall	193, 199
	Kidd, E. C.	377	Lorenz, Egon	233	Mills, Allen	119	O'Hare, Joseph E.	335	Plant food	224
	Kidney, Artificial	178, 231, 291	Loudspeaker	144	Minor, Allen H.	271	Ohler, W. Richard	166	Plant growth	245
19			Lowdermilk, Walter C.	37	Mirror	88	Ohmart, Philip E.	371	Plants	28, 109
383	Kidney stones	194, 397	Lubricants	104	Mishin, Mortimer	184	Oil	11, 249, 277	Plasmofalt	402
355	Kienielski, Walter E.	214	Ludwig, Harvey F.	390	Mitchell, Dana D.	118	Oil can	79, 240	Plastic, Bullet-stopping	160
359	Killough, John H.	55	Luecke, R. W.	164	Mitchell, John W.	109	O'Keefe, John A.	11	Plastic basket	288
234	Kingsley, Elizabeth M.	200	Luhrmann, G. W.	172	Modest, Edward J.	136	Okita, George	264	Plastic bottles	233
272	Kiser, Clyde V.	24	Lumber	56, 104	Mohr, C. F.	296	Okress, E. C.	294	Plastics	93
360	Kissen, Martin D.	54	Lung, Missing	46	Moisture balance	384	Olansky, Sidney	297	Platelets	271
61	Kitchen, D. K.	104	Luria, S. E.	165	Molander, David W.	252	Old Age	7, 244, 370	Platipithcus	338
0, 50,	Kite	224	Lutz, Brenton R.	258	Mole crabs	343	O'Leary, M. J.	38	Plowright, Thomas R.	152
300,	Kittleson, A. R.	67	Lynch, Ruth	66	Molecules	227	Olsen, Kenneth H.	168	Plunkett, Robert E.	359
404, 405	Klavy, Leslie M., Jr.	117	Lynch, V.	194	Monkeys, Neurotic	147	Omnirange	116	Plutonium	213
403	Kline, Daniel L.	40			Monteith, A. C.	162	Onions	284	Pneumonia	41
265	Knecht, R. W.	279			Montgomery, G. F.	268	Operations, Prompt	88	Pollution, air	76
109	Knee pony	135	McBride, Earl D.	88	Moolten, Sylvan E.	178	Opinion change	211	Population	69
114	Koala	49, 63	McCarran Act	23, 230	Moon, Robert J.	406	Orange juice	207	Pork	345
184,	Koch, William	166	McCleary, Robert A.	41, 371	Moon	2, 28, 199, 268, 364	Orange trees	57	Porter, Milton R.	314
342, 405	Kofranek, Anton M.	136	McCowen, Max C.	55	Moore, Alice E.	39	Orchard protection	15	Porter, William	402
339	Koosmann, Gretchen	307, 310	McCracken, Earl	56	Moore, C. C.	130	Orde, A. C. Campbell	83, 183	Portier, P.	397
402	Krabacher, E. J.	408	McCulloch, Warren S.	323	Moore, Dan H.	137	Organ	240	Positronium	313
188,	Kraeling, Carl H.	183	McCune, William S.	34	Moore, J. E.	296	Organic compounds	214	Potatoes	356
355, 396	Krasnow, Frances	23	McDade, H. J.	345	Morgan, Agnes Fay	200	Osborne, Darrell E.	297	Potter, Helen C.	297
ling	Kraus, John D.	135	Macfarlane, Jean Walker	333	Morgan, Russell H.	184	Overholt, Richard H.	168, 361	Poultry feed	249
record	Kretsinger, Elwood A.	317, 325	McIntosh, W. W.	233	Morgan, W. W.	25	Overstreet, Roy	70	Power	25, 41
	Krilium	8	McKay, J. W.	106	Morphine	147	Owner, Frank M.	216	Power lines	55
	Kroeber, A. L.	301	McKellar, Andrew	15	Morris, George E.	205	Oxygen, Liquid	361	Power unit	272
	Kroger, W. S.	383	McLaughlin, Dean B.	15	Morrison, Lester M.	376	Oysters	370	Powers, E. L. Jr.	130
	Kron, Gerald E.	131	McNeill, James K.	168	Morrow, E. B.	9	Ozanis, V.	120	Pre-Columbus visits	117
	Kuiper, Gerald P.	90	MacPherson, James L.	8	Mortality, Infant	178			Pre-Delinquency	188
185, 328	Kulp, J. Laurence	19			Moses, Campbell	153			Pregnancy test	117, 152
34, 54	Kurzweg, Hermann H.	162			Motor	267			Premature babies	265
9	Kyes, Frank M.	62			Mouse, Mechanical	309	PETN	105	Pressure effects	317
148, 162			Mabee, William B.	326	Movie screen	45, 128, 240	PVP-Macrose	389	Primaquine	392
352			Machine coolant	265	Machlin, L. J.	251	Pacific exploration	351, 392	Printed circuits	203
134			Magnet, Bar	412	Movies, 3-dimension	374, 405	Pace, Ernest W.	389	Printer, Magnetic tape	192
312,	Laffineur, M.	101	Magnetic switch	389	Mower, O. H.	157	Paging System	384	Probe, Magnetic	320
358, 406	Lake	6	Magnets	8	Muench, Karl	134, 161, 162, 175	Pajama	215	Project Cirrus	125
24,	Lamb	5	Magoun, Horace W.	92	Muffin tin	183	Pail	224	Project Sneeze	249
228, 392	Lambs, Sick	213	Mahl, George F.	153	Mugletoen, P. W.	72, 384	Pain relief	392	Projector	176
69	Lamp	23, 192, 304, 320	Malaria	39, 201	Muffler	393	Paint-treating fluid	352	Projector, Recording	208
276	Lampshades	128	Manrove trees	105	Muggleton, P. W.	296	Paint undercoat	112	Protective coating	144
	Land, Emory S.	40	Manning, Paul R.	231	Multiple sclerosis	329	Painted Lady	102	Protector, Rocket	368
	Landing aids	393	Manpower, Scientific	24, 30, 311	Munk, Walter	409	Palsy	133	Proteins	100, 156, 251, 265
	Language, Insect	301	Map reading	35	Munson Charles S.	292	Papadakis, E. P.	404	Psychoanalysis, "Distance"	326
	Lankford, J. W.	169	Map plotting	35	Murdoch, Joseph	103	Paper	172	Puddington, Ira E.	88
130	Lapides, Jack	397	Maple syrup	402	Murphy, Goodrich K.	253	Paper plates	233	Pugh, L. G. C.	44
102	Lapp, Claude J.	50	Maples	179	Murray, H. C.	16	Parachute dummy	160	Pullar-Strecker, H.	312
255, 372	Lark-Horowitz, Karl	169, 409	Mapping	16, 35, 199, 341	Musical pup	387	Paralysis	325	Pump	224
392	Lar Rue, Carl D.	105	Marler, George D.	39	Muzik, Thomas J.	105	Paralytic	66, 141	Punch kit	79
189	Lauer, A. R.	55	Marriage	44, 71, 216	Myasthenia gravis	286	Parker, D. M.	195	Pyromen	338
182	Laufer, Wilma P.	133	Martin, Gustav J.	252, 271	Myers, George S.	293	Parker, Melvor	119		
55	Lavine, Oscar	40	Masked bobwhite	119	Myers, William G.	195	Parks, Herman D.	104		
37	Lawrence, Ernest O.	19	Maslach, George J.	338	Mylander, Harvey A.	232	Parmalee, Paul W.	300		
411	Lawrence, R. S.	277	Mason, Arnold C.	316			Parsons, John	281	Qataban	296, 323
183	Laxative	88	Massermann, Jules H.	147			Particle	165	Quig, Joseph B.	280
201	Learning	178, 293	Master, Arther	264	NAS, New members	295	Partridge, John W.	373	Quiz kids	25
156	Ledinko, Nada	300	Masur, Jack	376	Nacelle tester	194	Paterson, Edith	36		
204	Lee, Kwang Soo	261	Mathematics	353, 362	Nadig, F. H.	195	Patients	395		
21	Leighton, Alexander H.	279	Mather, Frank J. III	386	Nadig, Meyer	231	Patterson, Gordon D.	214	Rabe, Peter	228
21	Leighton, Joseph	227	Mather, Kirtley F.	19, 22	Nailing machine	16	Payne, Eugene H.	136	Rabies	197, 388
291	Lemere, Frederick	326	Matthews, Joyce J.	36	Nameplate	112	Payne-Gaposhkin, Cecelia	283	Rachet grip	79
137	Lemmings	344	Mattress	160	Namias, Jerome	2, 27, 53, 84, 339	Peacock	377	Radai, Wm. E.	89
280, 388	Lemon, H. M.	279	Maxwell, Allan D.	5	Nasonite	292	Peacocks	120	Radiated blood	258
79	Lenses, safety	176	May, Curtis	43, 282	Nassau, J. J.	25	Pearly, Joseph Y.	232	Radiation	36, 45, 248
272	Leon, Alberto P.	347	May, Jacques	166	Natelson, Samuel	265	Peckham, Robert H.	61	Radiation effects	255, 311
12	Leonard, Samuel L.	29	Mayer, Jean	263	National Science Fair	281, 307	Peery, Thomas M.	248	Radiation protection	233
185	Leonardo da Vinci	247	Mayneord, W. V.	358	National Science Founda- tion	50, 52, 67, 201, 309	Peirce, A. W.	262	Radiation treatment	372
125	Leprosy	406	Mead, James F.	53	Navigation	50, 52, 67, 201, 309	Pencil	400	Radio reception	236, 294
181	Lettuce	7	Meagher, Ralph E.	94	Navigation aid	153	Penicillin	104	Radio storms	277
98	Leukemia	232, 233, 375	Measles	7	Nebula	5, 66, 113, 115	Penicillin, New	393	Radio telescope	151
14	Le Vett, Harry L.	73	Medawar, P. B.	322	Neck pains	185	Penicillin, New	137	Radiocarbon contamination	312
137	Levy, David	228	Meigs, Peveril	214	Nelson, Thurlow C.	370	Permafrost	114	Radiocarbon dating	192
389	Levy, Sol	324	Mellon, Melvin G.	216	Neubauer, Raymond	109	Permananyl fluoride	2	Radios	492
69	Lewenz, George F.	214	Memory	72	Neurotics	157	Peterson, Allen M.	236	Radium	215
26	Lewin, Ralph A.	304	Mending tape	216	Newell, Norman D.	392	Peterson, D. H.	253	Rajchman, Jan A.	105
68	Lewis, Berkeley R.	111	Mental disease	295	Nicholson, Seth B.	90	Peterson, Elbert A.	109	Raindrop	215
197	Lewis, C. I.	284	Mental hospitals	104	Nickel-Aluminum binder	278	Peterson, Harold L.	201	Rainmaking	83, 109, 125
231	Libby, W. F.	19, 312	Mental test diagnosis	92	Nieburgs, H. F.	191	Petroleum chemicals	181	Ramsdell, Floyd A.	374
65	License tags	150	Menzel, Donald H.	117	Nininger, H. H.	364	Pettersson, Hans	242	Randall, W. C.	265
116	Lichens	364	Mercury	50, 51	Nishita, Hideo	125	Phantom limb	195	Rapidnye, Fairchild	36
98	Lichtenberger, H. V.	24	Merrill, Paul W.	20, 278	Nitrogen	73	Phillips, G. J.	344	Rapp, Gustav Wm.	152, 165
	Licklider, J. C. R.	217	Mertie, John B.	92	Noise	209, 218, 356	Phillips, John	358	Rappleya, George W.	402
	Life forms	168	Messinger, Paul H.	372	Noise, Aircraft	325	Photocopying	162	Rasmussen, Theodore B.	248
	Life raft	32	Metal cutting	197	Noland, Bill	151	Photoflash test bulbs	164	Rats	51, 252
216	Lifeboat	103	Metal pipe	9	Normal people	329	Photography, Aerial	288	Raudsep, Ilmar	172
313	Light	272, 412	Metal shaping	294, 298	North Pole	329	Photograph	35	Raup, Hugh	98
151	Light, Artificial garden	136	Metal surfaces	195	Nova	155, 181, 245, 283, 355	Photoshock	332	Ray, Francis E.	377
369, 377	Light, Speed of	69	Metals	399			Photosynthesis	194	Recorder	208, 272
344	Light flickers	403	Meteor dust	278			Piano, Beer-Proof	322	Recorder, Stereophonic	118
361	Light sockets	400	Meteors	85			Picture frame	5	Recording system	368
399	Light switch	384	Meyer, Alvin F., Jr.	61			Pie holder	379	Rectifiers	409
297	Lighter kit	32	Mica	352			Pielou, D. P.	89	Reducing drug	358
58	Ligon, J. Stokley	119	Michelson, Borge	403			Pierson, Willard J.	120	Reeve, E. B.	29
217	Lincoln, Robert E.	103, 371	Micro-motion movies	131, 392			Piggly bank	198	Reflective sheeting	55, 336
11	Linder, Ernest G.	293	Microorganisms	313			Pigott, R. J. S.	51	Rein, Charles R.	104
328	Linder, R. C.	9	Microtome	411			Pike, Gordon C.	98	Reserves, Military	374
162, 168	Lindert, A. W.	402	Microtron	162			Pinkerton, Henry	293	Reservoir site	406
348	Liston, Edward	252	Migration	162			Piotrowski, Stefan L.	159	Retiucose	45
397	Liver	195	Milburn, Nancy S.	386			Pipe bowls	25	Reynolds, D. M.	159
324	Lock, C.	224	Milburn, Richard	345			Pipelines	96	Reynolds, Robert B.	225
283	Lock	27	Milch, Elmer	402			Pistol grip	390	Rheumatism	72, 262, 377
151	Lockjaw	342	Milk tank trucks	121			Place mat	288	Rhine, J. B.	217
43	Locomotive, Adjustable	326	Miller, Albert R.	162			Pickett, R. L.	304	Rice bran oil	140
	Locusts	326						300	Richards, Paul L.	117, 162

Richardson, G. C.	152	165	Selenium	361	Steward, J. S.	51	Trichinosis	166	Watson, James E., Jr.	59
Richardson, Howard L.	198	Seligser, Robert V.	188, 370	Stewart, A. S. R.	313	Triebel, William	212	Watts, C. B.	199	
Richey, Ch.	397	Severi, Mentore	34	Stewart, Hal B.	184	Trillium	268	Watts, Lyle F.	56	
Richter, Curt P.	227	Sewage	390	Stiffel, Theophile A.	77	Tritium	130	Watts, William S.	14	
Ridick, Thomas M.	283	Sewing cards	112	Stilbamidine	333	Truman, President H. S.	149	Weather	17, 25, 26, 53	
Ridenour, Louis N.	211	Sex	165, 242	Stilbestrol in chicken	134	Trypanosomes	67	83, 84, 87, 123, 150,		
Riddings, G. H.	68	Sex, Rejuvenation	211, 232	Stollerman, Gene H.	392	Trytten, M. H.	311	179, 181, 190, 235,		
Riss, Bernard F.	216	Sex, Atomic changes	261	Stomach ulcers	261, 340, 348	Tuberculosis	72, 139,	295, 315, 318, 327,		
Riffe	256	Shahan, M. S.	157	Stone, J. J.	73	167, 230, 312, 313,	334, 343, 358, 359,	361	Weather, Dishpan model	328
Rieger, Leo G.	253	Shannon, Claude E.	309	Stone, Kirk H.	5	Turbo-jet engines	3	Weather Bureau	149	
Riley, Richard F.	162	Shapley, Harlow	405	Storsand, Bjarne	286	Turboprop exhaust	137	Weaver, J. M.	151	
Road damage	321, 327	Sharp, Robert P.	88	Straus, Henry A.	185	Turkeys	200	Weaving device	176	
Robbin, Joseph S.	178	Sharville, E. G.	124	Strontium	367, 373	Turner, B. Bynum	263	Weir, David R.	232	
Roberts, D. L.	249	Shea, Richard F.	325	Stubblefield, Elton	307, 310	Turner, Neely	300	Weiss, Walter	211	
Roberts, Eugene	20	Sheep	262	Stubbornness	152	Turtles	129, 134	Welch, Henry	119	
Roberts, Frank H. H., Jr.	411	Sheffield, F. D.	217	Suechman, Edward A.	105	Tuthill, L. H.	150	Wessler, Stanford	280	
Roberts, Owen J.	22	Shepherd, Deborah	130	Sugar, Hot	148	Twin chicks	117	West, Philip M.	263	
Roberts, Walter Orr	243	Sheswood, Stephen L.	99	Sulfa drugs	19	Twitchell, Thomas E.	141	Wester, Robert E.	17	
Robot motorist	99	Shock	29	Sulfur	47, 360	Tyler, Edward T.	389	Westerberg, Martha R.	286	
Rocket fueling	183	Shock prevention	137	Sun	5, 243			Wexler, H.	212	
Rocket motor	257, 263	Shorr, Ephraim	373	Sun tides	278			Whale	229	
Rockets	194	Shuck, James L.	95	Sunglasses	61, 203			Whales	98, 219, 322	
Rodgin, David W.	293	Shutter	35, 36	Sunspots	399	UHF	119, 181	Whaley, Randall M.	169, 409	
Rodnick, David	24	Sickelbower, Kenneth E.	135	Supomela, Arnie J.	397	Ulett, George A.	332	Wheat	66	
Rogers, Edward F.	15	Siegel, Arthur I.	296	Superonic knife	131	Ulmer, W. L.	105	Wheels	48	
Rolsin, L.	296	Siegler, Samuel	389	Surface tension	352	Ultrasonic machine	176	Whipple, Fred L.	195, 309	
Roller, Duane	329	Sieh, James G.	281	Swallen, Jason R.	168	Ultrasonics	328	White, Theodore E.	406	
Ronicker, Henry	11	Sign	192	Swartz, Paul	235	Umbrella	32, 256	Whitehill, A. R.	12	
Rosenberg, Milton	105	Signal light	352	Sweet, William	223	Ungar, J.	393	Whitman, Walter G.	154, 162	
Ross, Wayne M.	398	Silver tarnish	236	Swimmers' itch	120	Unorthodoxies	283	Whooping cough	312	
Rotachi, Henri	195	Silverberg, Jay H.	227	Swimming pool	240	Upper atmosphere	396	Whooping Crane	140	
Rowen, John W.	227	Simmons, James Stevens	316	Swisher, Scott N.	311	Upright cleaning	136	Wiegand, Clyde E.	228	
Rubber cleaner	368	Simmons, John F.	377	Syphilis	296, 297	Uranium	152	Wild, John M.	126	
Rubber-testing device	336	Simmons, Norman S.	260	Syringe	48	Uranium prospecting	240	Wilkins, Lawson	248	
Rubin, Morton J.	315	Sinnett, C. M.	119	Szybalski, W.	312	Urey, Harold C.	2	Willcox, Frederick P.	36	
Rubin, Sylvan	327	Sirianni, Aurelio F.	88			Urteaga, Oscar	136	Willett, H. C.	315, 363	
Ruis Castaneda, Maximiliano	287	Skiing	40					Williams, Clyde	116	
Rundles, R. Wayne	375	Skoog, Folke	149					Williams, J. H.	39, 292	
Runway marker light	137	Sleeping cars	103					Williams, Jonathan W.	383	
Runways	367	Sleeping pads	55	TB drugs	132	Vacation safety	376	Williams, Langbourne M.	47	
Rusoff, Jerome H.	392	Slevin, Joseph	134	TEM	200	Vacuum cleaner	237	Williams, Robley	403	
Russell, William A.	200	Slide mount	336	Tea tube reactivator	368	Vallee, Bert L.	216	Williams, Roger J.	13	
Ryan, James J.	207	Slide rule	384	Table cover	64	Van Allen, James A.	180	Williamson, Martin B.	231	
		Sloviter, H. A.	405	Talkie, Hand	176	Van Beisbroeck, G.	101	Wilson, Clifford C.	104	
		Smeiser, George K.	120	Tank	269	van der Hulst, H. C.	195	Wilson, M. L.	104	
				Tannenbaum, Albert	183	Vandemark, J. S.	124	Wind tunnel	338, 342	
		Smith, David Y.	133, 172	Tapeworm	68	van Riper, Hart E.	50	Windle, William F.	338	
SR-406	67	Smith, F. G.	38	Taste, Animal	187	Vanselow, Albert P.	270	Window shades	240	
STS projects	173	Smith, Homer W.	329	Taste, electric	319	van Straten, Florence W.	329	Window sills	320	
STS Winners	85, 117, 145,	Smith, Madorah E.	214, 327	Taxpayers advocate	253	van Woerkom, A. J. J.	357	Winds atmospheric	358	
		Smoller, Saul	46	Taylor, Robert B.	299	Variegated Fritillary	65,	Windsail wax	296	
Sabin, Albert B.	303	Snodgrass, R. E.	343	Technetium	278		69, 102	Winsor, Travis	105	
Sabine, Paul	294	Snow	12, 200	Teeth, False	62	Vegetables	57, 348,	Winternitz, Milton C.	103	
Saenger, Gerhart	185	Snow vaporizer	383	Telephones	126	Vehicle, Current-storing	286	Wirephoto	360	
Safety goggles	128	Social change	279	Telescopes	241, 250	Vein clot	231	Wise, R. J.	68	
Salamander, Blind cave	339	Sodeaman, W. A.	68	Television	77, 114, 119,	Veinott, Cyril G.	73	Wissler, Robert M.	271	
Saliva	165	Sofar	147	121, 151, 264, 297,	351	Veins	34	Withrow, Robert B.	245	
Salik, Jonas E.	50	Soil	70	Television, Color	105	Veldkamp, J.	351	Witty, Paul	25	
Salt shaker	199	Soil moisture	117	Television, Ultraviolet	232	Vicari, Emelia M.	94	Wolf, Benjamin	367	
Salvaging	252	Soilless gardening	133	Television, Underwater	83, 405	Villard, Oswald G., Jr.	236	Wood, Louvan E.	190	
Salberg, C. D.	358	Sokoloff, Boris	248	Television antenna	181	Violets	236	Wood, W. Barry, Jr.	41	
Samuels, Leo T.	200	Sokoloff, V. P.	185	Television gunsight	177, 182	Virus, Plant	293	Wood, Very strong	151	
Sand packer	144	Solar radiation	324	Television tubes	168, 182	Viruses	39, 165, 178,	Wood paneling	224	
Sandwich tree	377	Solar system	213	Tenney, Ashton M.	280	Vision	303, 308,	Woodpecker ring	286	
Sanghui, L. D.	30	Soldering gun	79	Tension	286	Visual discrimination	182	Woolard, Edgar W.	28	
Sanguin	329	Sorbitol	184	Tent	368	Vitamin B-6	109	Word recognition	184	
Santesson, Gunnar	261	Soremuzzle	255	Tepehpan Man	194	Vitamin B-12	43, 77,	Work gloves	336	
Satellites	90	Sorenson, H. A.	352	Thatcher, H. van H.	89	Vitamin D	5	Workman, E. J.	83	
Sauce warmer	90	Soroka, Robert	104	Theiler, Max	54	Vitamin E	200	Wounds	231	
Sawdust	230	Soybean oil	54	Therapy, Converging beam	215	Volcano	283	Wright, Dorothy	326	
Schartenberg, Fred L.	332	Spaght, M. E.	104	Thewlis, Malford W.	370	Voltage tester	128	Wright, George	51	
Schauer, P. C.	101	Spectacles	96, 320	Thioctic acid	263	von Bergen, Werner	280	Wrist watch	256	
Scheinberg, Schayel R.	391	Speech, Monkey	261	Thompson, Clarence G.	114	von Neumann, John	179, 386	Wylie, C. C.	375	
Schieve, James F.	130	Spenceley, George W.	296	Thompson, Ralph M.	45	Vonnegut, Bernard	109			
Schilling, G. F.	51	Spender, Percy C.	377	Thomson, I. L.	399	Voronoff, Serge	211	X 948	67	
Schirmer, J. S.	166	Sperli, George	207	Thomson, J. E. M.	88			X-Ray	120	
Schizophrenia	99, 323	Sphinxes	186	Thorium	92			X-Ray examinations	377	
Schmid, Louise	162, 172	Spies, Tom	77	Thorn, Sylvester W.	59			X-Ray films	304	
Schneider, H.	377	Spinal cord	338	Thread	224			X-Ray monitor	368	
Schneller, George H.	19	Spotlight	260	Three A's	344			X-Rays	182, 388	
Schnitzer, Robert J.	67	Sprayer gun	256	Thulium	120			X-Ray, Televised	406	
Schoenbach, Emanuel B.	333	Sprinkler	256	Thunderstorms	51, 84					
Schuhardt, Vernon T.	137	Squirrel	21	Thyroid	44					
Schweitzer, Albert W.	237	Staples, Ruth	357	Tidal waves	167					
Schwenche, Edmund H.	185	Star	20, 131	Tie case	144	Wahlin, H. B.	94			
Schweb, Roger	60	Star light	4, 15	Tiffany, William R.	70	Waking	92			
Science classroom	245	Starr, M. P.	159	Tiles, Luminescent	134	Waksman, Selman A.	313			
Science for defense	154	Stars	7, 25, 58, 122,	Timing unit	336	Wald, George	182			
Science forecast	10	202, 267, 278, 346,	407	Titanium	287	Wales, Nathaniel B., Jr.	23			
Science Service trustees	329	Stars, Radio	38, 135	Tjokronegoro, Sutomo	61	Walker, A. Earl	98			
Science Talent Search	74	Staud, Cyril J.	164	Toad	289, 293	Walker, Ernest P.	261	Yarwood, C. E.	355	
Scientific equipment	229	Steam cleaner	16	Tobacco	34	Walkie-Lookie	303	Yenger, C. F.	403	
Scientist, Responsibility of	284	Steel, Copper-Clad	105	Tobey, Charles W.	103, 166	Walking aid	272	Yeager, Robert L.	72	
Seintillation probe	196	Steel plates	352	Tonsil bleeding	339	Wall coating	320	Yeast, Hybrid	133	
Scott, Kenneth G.	408	Steele, Byram W.	150	Toothache	235, 325	Wall covering	64	Young, James H.	199	
Scott, T. F. McNair	351	Steele, Frederick I.	62	Toothbrushing	380	Wallace, J. M.	377	Younger generation	333	
Scott, W. W.	98	Steenen, William, Jr.	334	Tops, Can	128	Walboard	46	Yudkin, John	201	
Scrapps, Charles E.	329	Stein, Norman	203	Tornado	212	Wallaard, Frederick F.	151, 335			
Seroll, Bronze	243	Steinberg, D.	265	Tornadoes	69					
Sudder, John	315	Steinbrocker, Otto	377	Torpedo, Wakeless	350	War gas treatment	131			
Sully, Norbert J.	261	Steinhaus, Edward A.	188	Torpedo computer	398	Ward, Grant E.	314	Zapfe, H.	338	
Sea anemone	259	Steinholz, Reuben	46	Torrey, Paul D.	11	Warren, Shields	24, 139	Zebra	97, 111	
Sea water, Desalting	150	Stekol, J. A.	249	Tow-Target	112	Washington, George	108	Zentmyer, George A.	73	
Seaman, John R.	134, 172	Sterility	389	Toy	192	Waste basket	304	Zeebe, Louis J.	201	
Sears, Paul B.	335	Stern, Joel R.	213	Traffic control, Air	340	Water, Life in	147	Zinn, Walter H.	24	
Seat, Folding	412	Stessel, George	282	Transfusions	367	Water-repellency	356	Zirkle, Conway	21	
Se Bastian, Ford	383	Stethoscope, Electronic	144	Transistors	138, 151	Water wells	232	Zooplankton	134	
Seeds	184	Stevens, Harold	383	Tree sparrow	60	Waterman, Alan T.	52	Zuckerman, Bert	282	
Sekido, Y.	66									

59
199
56
14
53.
50.
35.
27.
79, 411
328
149
151
176
232
211
119
280
263
170
286
212
229
19, 322
69, 409
66
48
95, 309
406
12
54, 162
312
140
228
126
248
36
15, 363
116
39, 292
383
M., 47
403
13
231
104
41
104
38, 342
338
240
320
358
32, 133
296
105
103
360
68
271
245
25
367
190
41
151
224
286
28
184
137
336
83
231
326
51
256
375

67
120
377
304
368
52, 388
406

355
403
72
133
199
333
201

338
97, 111
73
201
24
21
134
282